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TABLE OF CONTENTS

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STRUCTURE AND RULES IN AKHA MORPHOLOGY

D.W. DELLINGER

Morphology in the languages of Southeast Asia is not nearly so extensively dealt with as are problems of phonology and syntax. This is largely attributable to the propensity for monosyllabism of these languages, which consequently diminishes the probabilities of morphological development. Significant also is the lack of inflectional systems in these same languages. There are some scholars who would even suggest that morphology as such is not extant, reducing all structural principles to the level of syntactic rules. While in a generative sense this may be the way all morphologies will pass, in a structural sense there is probably a morphological level in most of the languages of the area - at least in the Tibeto-Burman ones - a distinguishable level between that of individual morphemes and syntactic constructions.

Initially, we might designate as morphology all constructions containing one or more bound morphemes. This will exclude noun and verb compounding and will also insure that we are at least discussing constructions of some nature. But this is overly broad because there are syntactic, bound morphemes - particles - which function only in syntactic rules. Particles are non-derivational for several reasons: 1) they are optional in any construction in which they occur; 2) their occurrence never changes the basic meaning of the expressions in which they occur; 3) the semantic contribution they make to any construction is consistent and always predictable; 4) they function as constituents only at the level of noun and verb phrases, and whole sentences.

The area of consideration can be narrowed by defining as a word in Akha all free morphemes and combinations of a free morpheme plus one or more bound, non-particle morphemes. The obligatory presence of the bound morpheme in a particular word is shown by the fact that to omit them would change the basic significance of the word. These bound morphemes

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are further distinguishable from particles in that they are not constituents in phrases as the latter are. For instance, a noun phrase might consist of a noun such as /nyṃ/ *'house'* plus a modifier like /yɔm̀/ *'good'*: /nyṃ yɔm̀/ *'good house'*. Noun phrases might have noun particles, e.g. /nyṃ yɔm̀ tæ̀?á/ *'only a good house'*. But morphological construction such as /ʃbo̰/ *'water container'* (/ʃ-/ *'water'* + /-bo̰/ *'container'*) cannot be syntactically expanded in a comparable fashion, i.e. the /ʃ-/ being a bound derivational morpheme cannot be modified as in */ʃ yɔm̀ bo̰/ *'container for good water'*.

There are two kinds of morphological processes, which I will call reduplication and derivation. Reduplication is the repetition of a syllable, or part of a syllable, to create a different word, usually semantically related to the original one but belonging to a different grammatical category. Derivation is the addition of semantically and phonologically unrelated morphemes for the same purpose of word formation. Almost one hundred per cent of all derivation occurs in noun formation, while the preponderance of reduplication results in verb constructions.

The most ubiquitous derivational morpheme is /a/ which occurs repeatedly as the initial syllable of words.

1) /àchő/ *breast, milk*
2) /àjæ̀/ *what*
3) /àkhɬ/ *leg*
4) /àkhɨ̀/ *dog*
5) /abyè?/ *sprout*
6) /á̰ca?/ *rope*
7) /á̰nɬ?/ *seed*
8) /á̰bɔ̀?bɔ̀?/ *to embroider*

This sound has its counterpart in the atonic initial /a/ in Burmese; /a/ and /ɔ/ in Lahu; etc. If it is ever the case that /a/ can be identified as a morpheme in Akha, then it is probably identifiable as several, but it is very difficult in any case to pin-point a function or meaning for it. The most suggestive case is in the interrogatives:

9) /àjæ̀/ *what*
10) /àgá̰/ *where*
11) /àsúɣà/ *who*
12) /á̰myo̰/ *when*
13) /àjo?/ *how*
14) /á̰mya?/ *how much*

The /a/ might be considered to be the interrogative morpheme (note the tone change).

There are numerous compounds formed by combination of full morphemes with some tonal variation on the theme of /a/, such as the following:

15) /áca?/ *rope*
16) /àchő/ *breast*
17) /án+?/ *seed*

For compounds of this sort, their classifier for counting purposes is usually the last syllable, e.g. /áca? thì ca?/ *'one (rope of) rope'*. To this extent, all the syllables of such compounds can be considered as free morphemes; but to the extent that the second syllables (the full morphemes) are restricted to this one usage, they actually are bound in some real sense. /chő/ occurs nowhere else in the data; by contrast, /ca?/ and /n+?/ both occur extensively as classifiers, /ca?/ for rope-like objects - ropes, chains; and /n+?/ for seed-like objects - seeds, eyes, etc. But this classifier function appears to be the totality of their existence outside of morphological constructions, save in only a few instances. For morphemes like /chő/, then, the rules for classifiers would have to account for them as some kind of reduplication or recopying of final syllables. With these facts in mind, it is hard to determine the precise relation or relations of /a/ to these other syllables. For some it seems to convert a classifier to a noun; for others like /àchő/, there is no synchronic interpretation available. One might suspect /-chő/ is the reflex of some earlier free morpheme.

One can surmise /a/ was once a structurally active element (perhaps still is) and part of a widespread morphological process; it is extremely frequent among the nouns, quite rare in the verbs.

There are quite a number of other bound morphemes that are isolable. I would like to provide some data, first, on just a few of them and then some discussion relevant to the data. For example:

a) /-bạ/ *container*
   18) /ʃbạ/ *water container (/ʃ-/ water)*
   19) /sà?bạ/ *rice steamer (/sà?/ to steam)*
   20) /khɬbạ/ *woman's legging (/khɬ-/ leg)*

b) /phǽ-/ *cloth*
   21) /phǽxạ/ *shirt (/xạ/ chest)*
   22) /phǽthạ́/ *shoulder bag (/thạ́/ ?)*
   23) /phǽyś/ *gunny sack (/yś/ ?)*

c) /-xạ/ *area*
   24) /dæxạ/ *courting area in village (/dæ/ sexual)*
   25) /mʃxạ/ *country (/mʃ-/ ground)*

d) /-ma/ *large, important*

26) /gáma/ *path (/gá/ place)*
27) /là?ma/ *thumb (/là?-/ arm part)*
28) /yà?ma/ *floor joist (/yà?/ pole)*

e) /ʃ-/ *water*

29) /ʃcù?/ *water (/cù?-/ ?)*
30) /ʃphu/ *water gourd (/-phu/ ?)*
31) /ʃdì dì/ *to swim (/dì/ to strike)*

f) /-ma/ *instrument*

32) /yæ̀ma/ *saw (/yæ̀/ to saw)*
33) /tshæ̀ma/ *hoe (/tshæ̀/ to hoe)*

g) /-ma/ *female*

34) /mah+/ *first wife (/h+/ big)*
35) /ǒma/ *granddaughter (/ǒ/ second descending generation)*
36) /àma/ *mother*
37) /yaci?ma/ *hen (/yaci?/ chicken)*

h) /mʃ-/ *land*

38) /mʃkhà/ *boundary (/khà/ to separate)*
39) /mʃtshà/ *ground (/-tshà/ ?)*
40) /mʃxɥ̀/ *country (/xɥ̀/ area)*

i) /khʃ-/ *leg*

41) /àkhʃ/ *leg*
42) /khʃbɥ̀/ *legging (/-bɥ̀/ container)*
43) /khʃdu/ *lower leg (/-du/ ?)*
44) /khʃphu/ *foot (/-phu/ ?)*
45) /khʃnǒ/ *toe (/-nǒ/ toe, finger)*
46) /khʃgɥgɥ/ *to sit cross-legged (/-gɥ/ ?)*

j) /-ts+?/ *joint*

47) /khʃts+?/ *ankle (/khʃ-/ leg)*
48) /là?ts+?/ *elbow (/là?-/ upper extremity)*
49) /khɔts+?/ *Adam's apple (/khɔ/ neck)*
50) /ats+?/ *bamboo joint*

k) /-nǒ/ *finger, toe*

51) /là?nǒ/ *finger (/là?-/ upper extremity)*
52) /khʃnǒ/ *toe (/khʃ-/ lower extremity)*
53) /chànǒ/ *ring finger (/chà-/ ?)*

l) /-chà/ *little*

54) /cháchà/ *little finger (/chá-/ ?)*

55) /khɬchà/ *little toe (/khɬ-/ leg)*

m) /-bæ?/ *?*

56) /khɬdubæ?/ *calf (/khɬdu/ lower part of leg)*

57) /šàphyàbæ?/ *thigh (/šàphyà-/ ?)*

n) /bù-/ *worm*

58) /bùjö/ *earthworm (/jö/ to crawl)*

59) /bùde/ *intestinal parasite (/-de/ ?)*

60) /bùthe/ *mosquito (/-the/ ?)*

o) /khà/ *far, to separate*

61) /lɔkhà/ *interior partition (/lɔ/ room)*

62) /ákhàphɬ/ *to separate (/-phɬ/ to carry)*

63) /yɔkhà/ *far*

64) /mɬkhà/ *border of a country (/mɬ-/ land)*

65) /yákhà/ *field boundary (/yá/ field)*

p) /-thæ̀/ *to close*

66) /pya?thæ̀/ *trap (/pya?/ to come apart)*

67) /mæ̀thæ̀/ *tweezers (/mæ̀-/ flat surface)*

68) /thæ̀/ *to cut with scissors*

In some cases, the other morphemes that these bound morphemes combine with can be identified, too, as can be seen above. In other cases, the other forms are obscure, as in 22), 23), 29), 30), 39), 43), etc. Many times these morphemes without identity apparently have a sole environment, such as /-cù?/ in /ɬcù?/ *'water'*; /-phu/ in /ɬphu/ *'water gourd'*; /-de/ in /bùde/ *'intestinal parasite'*; /chá-/ in /cháchà/ *'little finger'*. In such cases, synchronically they seem to say nothing more than *'this kind of X, not the other'*, e.g. a /bùde/ is this kind of /bù-/, not a /bùthe/ or a /bùjö/. In other instances, they recur, perhaps two, three or more times in the language, but still not with easily identifiable properties. /-bæ?/ might be assigned such semantic features as *'rounded, muscular areas of the lower extremities'* in 56) and 57), but /-bæ?/ apparently occurs nowhere else in the language and its precise semantic content remains quite abstract.

As would be expected in a language with a large percentage of monosyllabic morphemes, homonomy is extensive, cf. 1) /-ma/ *'instrument'*; /-ma/ *'female'*; /-ma/ *'large, important'*; 2) /mɬ-/ *'land'*; /mɬ-/ *'fire'* (not given in the data). And between this one extreme, homonomy, of the semantic continuum, and the other end, identity of morphemes, there are numerous examples of phonologically identical, or virtually identical, syllables with from closely to distantly related semantic relationships, e.g. /-khà/ in /yɔkhà/ *'far'* and /yákhà/ *'field boundary'*; /-thæ̀/ in

/mæ̀thæ̀/ *'tweezers'* and /thæ̀/ *'cut with scissors'*; or, at more of an extreme, /-phu/ in /ʃphu/ *'water gourd'* and /khɬphu/ *'foot'*.

A study of the underlying relations of morphological constructions can begin by noting briefly some of the relations and structural patterns exhibited in the data above. The most prevalent structural pattern is modifier-head, but this pattern has three variations. The first variation, modifier verb-noun head, can be exemplified by the following words:

69)	/sà?/	+ /-bl̥̀/	→	/sà?bl̥̀/
	to steam	*container*		*(rice) steamer*
70)	/yæ̀/	+ /-ma/	→	/yæ̀ma/
	to saw	*instrument*		*saw*

The relations expressed in these constructions are something on the order of purpose, cf. 69) *container for steaming*; 70) *instrument for sawing*.

A second variation is modifier noun-head noun, as in:

71)	/là?-/	+ /-tsɬ?/	→	/là?tsɬ?/
	upper extremity	*joint*		*elbow*
72)	/khɬ-/	+ /-nő́/	→	/khɬnő́/
	lower extremity	*toe,finger*		*toe*
73)	/ö̀-/	+ /-ma/	→	/ö̀ma/
	descending generation	*female*		*granddaughter*

The examples here seem to all express a relationship of subset membership, e.g. 71) *a joint of the upper extremity*; 72) *an appendage of the lower extremity*; 73) *a female of a descending generation from ego*.

The third variation is /a/ + head noun. For instance:

74)	/a/ +	/-tsɬ?/	→	/atsɬ̀?/
		joint		*bamboo joint*
75)	/a/ +	/khɬ-/	→	/àkhɬ/
		leg		*leg*
76)	/a/ +	/-ma/	→	/àma/
		female		*mother*

True to the normal pattern of the derivational process, the end product is unpredictable from the input morphemes. In 76), we might have predicted *'woman'*; instead, the product was *'mother'*. In 74), any general kind of joint or hinge might have been the expected product, but the result was a very specific *'bamboo joint'*. The other patterns show the

same derivational syndrome, cf. 73) where any number of specific kinship relationships could have been denoted; the specific denotation was *'granddaughter'*.

The reverse constructional pattern, head-modifier, also occurs on a widespread basis, again with several variations. The least common is noun-noun, which is exhibited by 21) and 37) above. Number 21) seems to be purposive in intent, i.e. *a cloth for the chest*; 37) expresses subset membership - a *chicken* female, rather than a cow, mare, etc. The other variations are of noun-verb patterns, but at least three different sorts of relationships are exhibited. In d) above, and in 34), there is an attributive relation, for example: 28) *large pole*; 34) *important female*. In 58) and 67) there appears to be a subtle expression of a subject-predicate relationship, viz. 58) *a worm which crawls*; 67) *flat surfaces that close*. And in 61), 64) and 65), the relationship that suggests itself is verb-object, e.g. 61) *separate the room*; 64) *separate countries*; 65) *separate fields*.

All of the foregoing discussion relates to patterns of noun derivation. But there is also a very small amount of verb derivation, cf. 31), 46), 62). Number 31) is expressive of a verb-object relationship, *'to strike the water'*. Nos. 46) and 62) are especially interesting, because the morphemes /gɑ̣/ and /phʃ/ in those two words respectively are bound and restricted to these exact occurrences. Historically, /gɑ̣/ might relate to /ɣɑ̣/ *'bent'*, giving *'bent legs'*; /phʃ/ perhaps is a historical relative of /phi/ *'to carry'*, which would suggest an earlier interpretation of *'to carry apart'*.

Having provided this discussion of the derivational processes exemplified within the data of this article, I am moved to protest it mightily. It is quite difficult to justify, I think, abstracting from a word like /mah̀/ *'first (major) wife'* an underlying meaning *'important female'*. The abstraction is based, of course, on the generalisation from all the occurrences of /-ma/ a unifying semantic content of female; and for /h̀/, something like *'important'*. But how to arrive from *'important female'* to *'major wife'*?

Or again, with /ʃdì dì/, how does one make the semantic leap from *'to strike the water'* to *'to swim'*? And yet a structural analysis of morphology, with its attendant labeling of modifier-head and head-modifier patterns, depends on a tacit assumption that such relationships exist. And in some sense I believe that they do exist. What one must also assume is that there are rules in language, hopefully highly regularised, that provide the bridge from one level to the other.

As in noun morphology, verb morphology seems also to have found some use for /a/, though it is not certain that this is so. Consider these

two examples:

77) /ábɔ̀ʔbɔ̀ʔ/ *'to embroider'*

78) /áchɛ̀chɛ̀/ *'to sneeze'*

/ábɔ̀ʔ/ means *'embroidery'*, so /a/ probably is a constituent of /ábɔ̀ʔ/, not of the verb. But there is no */áchɛ̀/ in the data, i.e. no noun, such as /ábɔ̀ʔ/, to be reduplicated to form a verb (see 79) below and discussion). Either the historical form of */áchɛ̀/ has been lost, or else /a/ must also operate (or, have operated) in verb morphology per se. There are several verbs similar to /áchɛ̀chɛ̀/ in having /a/ which, also like /áchɛ̀chɛ̀/, appear to be onomatopoetic, e.g. */áə̀/ 'to belch'*; */áhə̀hə/ 'to yawn'*, and for which we cannot posit a basic noun form.

The last structural pattern of verb morphology I will discuss is reduplication. Typically in languages of the area, reduplication is used for such things as intensification and emphasis. In verb morphology, it apparently operates sometimes purely to create verbs. At other times, no particular extra semantic effect is apparent, in my data.

Sometimes reduplication creates a verb from a noun; to reduplicate means to do a (very specific) thing concerning what is reduplicated.

79) /ábɔ̀ʔbɔ̀ʔ/ < /ábɔ̀ʔ/ + redup.
to embroider *embroidery*

(There is a verb /bɔ̀ʔ/ *'to embroider'*. Whether the verb was abstracted later from the verbalised, reduplicated noun, or the verb was nominalised by /a/ to create the noun is not clear, but the evidence suggests the former.)

80) /bɔ́tshɻ̀tshɻ̀/ < /bɔ́tshɻ̀/ + redup.
to hunt *jungle*

81) /chɛ̀chɛ̀/ < /chɛ̀/ + redup.
to defecate *faeces*

82) /àmɾ̀ byà?byà?/ < /àmɾ̀/ + /byà?/ + redup.
performance of a certain ceremony *cat* *striped*

Or, emphasis may be implied in some reduplication.

83) /ca?thm̀thm̀/ < /-ca?/ + /thm̀/ + redup.
to tie a knot *rope* *to tie up (apparently, only in compounds)*

84) /ɾdi̋di̋/ < /ɾ-/ + /di̋/ + redup.
to swim *water* *to strike*

Then there are the many interesting reduplications, where the exact underlying source is not clear.

85) /áchàchà/ < ? + redup.
to sneeze

86) /ɣǒ̀tshétshé/ < /ɣǒ̀/ + /tshé/ + redup.
to be genuine *nine ten* (*ninety*)

87) /ʃsüsü/ < /ʃ-/ + /sü/ + redup.
to urinate *water* *?*

It would be good at this point to be able to talk about compounding. There is a great deal of similarity between the nouns created by compounding in Akha and those in English. And though the underlying sentence constructions from which Akha nouns derive are quite different from those of English, the relationships expressed are similar. There are verbal compounds in Akha whose closest counterparts in English would have to be idioms. The number of these verbal compounds that occur in the language suggests they have a very interesting place of their own in the grammar. Unfortunately, the information I have is very tentative, and I would like to offer the following discussion as suggestive rather than definitive.

In noun compounding, the first structural pattern to be discussed will be that of modifying-noun + noun head, which is by far the most common. Within this pattern there are several types of relationships.

1) Time relationship

87) */yǽɣɸ́/ 'rainy season'* < */yǽ/ 'rain'* + */ɣɸ́/ 'season'*

The comparable expanded construction from which we might derive such compounds is:

88) /ùyǽyǽ ə/ + /ɣɸ́/ → *season when (that) it rains*
It is raining. *season*

This construction represents the usual mode of embedding a clause (*"It is raining."*) as modifier of a noun head. Since the meanings of the compound and the phrase have an obvious semantic relationship, and the forms of the two are so close, it is reasonable to suggest the compound is a transform (in R.B. Lees' sense) of the embedded phrase.

2) Possessive

89) */àkhʃ phǽyà/ 'sole'* < */àkhʃ/ 'leg'* + */phǽyà/ 'footprint'*

The common possessive constructional pattern is:

90) /àkhʃ ə/ + /phǽyà/ → *leg's footprint*
leg's *footprint*

Such possessive constructions commonly delete the possessive /ə/, which would yield a form identical with our compound. Though the /ə/ deletion in the possessive, and the compounding process, probably must be relegated to different transformations, the derivations are so similar the former strongly suggests the latter.

There is a very similar compound which expresses what I have called above 'subset membership'.

91) /àkh̀ sà/ < /àkh̀ ə/ + /sàjʃ/
dog meat *dog's* *meat*

The distinction between this compound and the preceding one can be expressed in English as the difference between "meat from a dog" and "meat belonging to the dog", respectively. The two expressions given in 91) are perfect paraphrases of each other, as given in my data. How the differences between compounds of possessive and subset relations become interpreted by the language I can't say at the moment.

In the compound /àchő sì/ *'nipple'*, there seems to be two possibilities. One would be to establish a new category of relationship:

3) *Location*

92) /àchő sì/ *'nipple'* < /àchő/ *'breast'* + /sì/ *'small, round object (or seed)'*

If this is the relation implied here, then it is again possible to turn to an embedded clause as a possible source for the locative expression.

93) /àchő ɖ̣ jɔ́ ə/ + /sì/ → *seed that is on the breast (a seed on the breast)*
It is on the breast. *seed*

A transformation deletes the locative particle /ɖ̣/ and the verb phrase /jɔ́ ə/ *'to be there'*. The other possibility would be to use a possessive explanation, as in 89)-90).

94) /àchő ə/ + /sì/ → *breast's seed*
breast's *seed*

A second structural pattern for consideration is identified structurally as noun head + modifying-noun. Again, there are several different relationships expressed in noun compounds of this pattern.

1) *"having" (accompaniment)*

95) /chǽ khḿ/ *'unhusked rice'* < /chǽ/ *'rice'* + /khḿ/ *'enclosure (such as a fence)'*

It is possible to hypothesise as underlying this an embedding of the following sort.

96) /chǽ khm̥ ja? ə/ + /chǽ/ → *rice that has an enclosure*

The rice has an enclosure. rice

The modifying-noun is derived from an embedded relative clause. The transformation that derives the compound would delete /ja? ə/ *'have'* and shift /khm̥/ *'enclosure'* to a post-nominal position.

Another relationship found in this pattern is:

2) Purpose (goal. use)

97) /gạ̀ chǽ/ *'dibble stick' (rice spear)* < /gạ̀/ *'spear'* + /chǽ/ *'rice'*

The apparent meaning of the compound is *'spear for (planting) rice'*. The purposive construction in Akha is like:

98) /chǽ/ /khɔ́/ /ni/ *'for planting rice'*

rice to plant for

If such a construction (the typical purposive type construction in Akha) is relatable to this compound, then the transformation must operate on a fuller construction such as:

99) /chǽ khɔ́ ni/ + /jɔ́ ə/ + /gạ̀/ → *spear that is for planting rice*

for planting rice It is (exists) spear

The phrase is composed of an embedded sentence (*It exists for planting rice.*) modifying *'spear'*. The transformation here deletes the verb /khɔ́/ *'to plant'*, /ni/ *'for'*, and /jɔ́ ə/ *'it is'*, and shifts the noun to a position after the head noun.

A third pattern is composed of a verb + noun head. Among the grammatical relations expressed by such patterns the predominant one is:

1) Purpose

100) /hɔ̀ m̥ sà?bạ̀/ *'rice steamer'* < /hɔ̀ m̥/ *'to fix rice'* + /sà?bạ̀/ *'steamer'*

If the phrase /hɔ̀ m̥/ were derived from an embedded clause, i.e. /hɔ̀ m̥ ə sà?bạ̀/, one would expect an interpretation like *'steamer that fixes rice'* - which is possible. But I would suggest as the probable source:

101) /hɔ̀ m̥ ni jɔ́ ə/ + /sà?bạ̀/ → *steamer that is for fixing rice*

It exists for fixing rice steamer

The appropriate nominalising transformation would delete /ni jɔ́ ə/.

A slight variation of this pattern is reflected in:

102) /yù?yá ù?tà?/ < /yù?/ + /yá/ + /ù?tà?/
sleeping platform to lie down to stay floor

Rather than a single modifying-verb, we have a concatenation of two. The proposed underlying source is the same as in 101), a /ni/ transformation of:

103) /yù?yá ni jɔ́ ə/ + /ù?tà?/ → *floor to lie down on and rest*
It exists for lying down on floor

There is also a pattern of noun compounds of the type noun + verb.

104) /hɔ̀ cà?/ *'boiled rice'* < /hɔ̀/ *'rice'* + /cà?/ *'to boil'*

105) /hɔ̀ chu/ *'package of rice'* < /hɔ̀/ *'rice'* + /chu/ *'to wrap'*

106) /hɔ̀ thù̱/ *'a rice delicacy of steamed, pounded rice'* < /hɔ̀/ *'rice'* + /thù̱/ *'to pound'*

Note that in each case the best circumlocution in English depends on a passive clause, i.e. *'rice that has been boiled'; 'rice that has been wrapped'; 'rice that has been pounded'*. The closest approximation to a passive in Akha is a sentence of the form:

107) /hɔ̀/ + /ŋà næ/ + /cà? ə/ → *The rice is (has been) boiled by me.*
rice me by to boil

For an underlying form for these compounds, there might be posited:'

108) /hɔ̀/ *(SOMEONE* /næ/*)* /cà? ə/ *'The rice has been boiled by SOMEONE.'*

A transformation deletes the passive agent and /ə/. For the example above:

109) /hɔ̀/ *(SOMEONE* /næ/*)* /cà? ə/ → /hɔ̀ cà?/
Rice has been boiled (by someone). *rice that has been boiled*

A most unusual pattern (only one example, to date) is verb + verb.

110) /chèchè dù/ < /chèchè/ + /dù/
outhouse to defecate to dig

I can only guess at the possibility of there being something like:

111) /chèchè ni/ + /dù/ → *Dig in order to defecate.*
in order to defecate to dig

The import of /chèchè dù/, then, would be something like *'something that has been dug in order to defecate'*. I think this word is a modern

acquisition; I am not aware of a long-standing practice of the Akha to dig holes for their toilet. Thus, it may be a loan-translation, or perhaps a loan-blend (/chè/ *'faeces'* alternates with /khè/; cf. Thai ขี้ /khîi/ *'faeces'*).

There is another pattern of a very anomalous nature - noun + verb + verb. I have one example, and its very meaning will suggest some of the reasons behind its anomalousness.

112) /húbí da yə?/ < /húbí/ + /da/ + /yə?/
helicopter *airplane* *to ascend* *to revolve*

This, I think, is a classic example of a hybrid compound. /húbí/ is from Thai เรือบิน /ryabin/ *'airplane'*, after the Shan dialect in which Thai /r/ is /h/. Added to this fact that part of the word is a loan, /húbí da yə?/ is obviously a modern word, so it might be expected the language would evolve a new construction to express a difficult distinction (between helicopters and regular airplanes). As to a source, it doesn't seem reasonable to posit an underlying sentence such as:

113) /da yə? ə/ + /húbí/ → *airplane that ascends (by) revolving*
to ascend (by?) revolving *airplane*

the typical embedded source I've suggested elsewhere, since obviously the plane does not revolve. /yə?/ does not characterise the plane, but a part of the plane. But I am not aware of a satisfactory source that will explain the relation between /húbí/ and /da yə?/.

By far the largest class of compounds has the structural pattern noun head + stative verb. In almost every case the stative verb is a characterisation of the noun head.

114) /abyè? chǽ/ < /abyè?/ + /chǽ/
a pickled condiment *sprout* *to be pickled*

115) /chæ phyú/ < /chǽ/ + /phyú/
husked rice *rice* *to be white*

116) /lɔ́dǫ byà/ < /lɔ́dǫ/ + /byà/
woman's (flat) necklace *necklace* *to be flat*

These are taken as compounds, rather than full sentences of the sort *"The rice is white"*, because of the form of the stative verb. A stative verb can function as either a predicate or a noun modifier. The form of the verbs here is that of predicates; but as a predicate, a construction similar to 115) would make the noun the subject and the verb would probably have a following verb particle, for example:

117) /chǽ phyú ə/ or /chǽ phyú ŋa/

which is to be translated, *"The rice is white"*. In this example, note the tone change in /chǽ/ *'rice'* to /chæ/ in the compound. Such a construction also constitutes a full sentence, not a nominal construction such as we have in 115). Neither are these constructions noun phrases composed of a noun head + modifying stative verb. In such phrases, the stative verb is marked by /yɔ-/, e.g. /chǽ yɔphyú/ *'white rice'*. Note, too, the shift in meaning for some of the compounds, e.g. 115); in a nominal phrase the meanings would be, respectively, *'white rice'*, and *'red metal'*.

In this class of compounds, noun + stative verb, there is an anomalous example.

118) /ʃcù?ʃtsæ̀?/ < /ʃcù?/ + /ʃ-/ + /tsæ̀?/
cool water *water* *water* *to be cool*

This pattern of reduplication of part of the word as above (/ʃ-/) occurs elsewhere as will be seen below, but this particular pattern - noun + noun (bound) + stative verb - is unique to this word. I don't know of any syntactic pattern in Akha that would be a satisfactory explanation for this reduplicative pattern.

This reduplicating phenomenon is illustrated also in /jʃbàjʃchú/ *'rice whiskey still'*, with a structural pattern of noun + noun (bound) + noun (bound?).

119) /jʃbàjʃchú/ < /jʃbà/ + /jʃ-/ + /-chú/
rice whiskey still *rice whiskey* *rice whiskey* *container*

This pattern, too, is an enigma; I cannot suggest a possible deep structure that might underlie this word.

From noun compounding I turn to verb compounding. Some of the morphological principles of the verbs duplicate, structurally, those of the nouns; some are unique to the verbs. The first structural pattern to consider is noun + stative verb. The relationship that seems to be expressed here is that of instrument of the verb.

120) /jʃbà yæ̀?/ < /jʃbà/ + /yæ̀?/
to be drunk *rice whiskey* *to be satiated*

There is an instrumental construction in Akha, e.g.:

121) /àjæ̀ ɣænæ/ + /nɔ̀ pa?/ → *(By) what did you step on and get cut?*
by what *to step on and cut*

Parallel with this there can be postulated an underlying sentence for

120) such as:

122) /ŋá/ + /jʃbà næ/ + /yæ̀? ə/ → *I am drunk.*
I *by whiskey* *to be satiated*

The intransitive character of /yæ̀?/ would require a verbal transformation to delete /næ/. The justification for this approach lies in the fact that in a sentence with the verbal compound /jʃbà yæ̀?/, e.g. /ŋá jʃbà yæ̀? ə/ *'I am drunk'*, /jʃbà/ appears in the position for a direct object, yet the sense of /yæ̀?/ is not transitive; it is not possible, in other words, to interpret /jʃbà/ as a separate constituent of the predicate (at this syntactic level). It seems more likely that on the syntactic level /jʃbà yæ̀?/ together form the verb of the predicate.

There is, however, a verb structure of noun + verb which definitely reflects an object + verb relationship. And yet the meaning of the structure is not really direct object + verb. And because it is not, I contend such structures are compounds, understood as a whole and not within the context of individual constituents of a predicate. The difference is reflected merely in the understood relationships of the parts. For instance:

123) /chǽ dì/ < /chǽ/ + /dì/
to thresh rice *rice* *to strike*

It would be nice to see in this pattern a transformation of some underlying sentence, but there are no overt markers of such a transformation - no deletions of morphemes, no insertions; no changes in order. So actually my notion is based on two arguments.

1) There is a difference of sense between *'to thresh rice'* and *'to strike rice'*, as in 123). One could suppose the Akha are capable of talking about both ideas, and if /chǽ dì/ is the proper expression for both, then the explanation for 123) may be idiomatic. Of course, translation equivalence is not the best grounds for argument, but there is an obvious semantic relation between *'thresh'* and *'strike'* which seems to also come out in Akha, and which it would be nice to retain if something like a transformational explanation could be found. A parallel situation is seen in:

124) /chǽ thɭ̀/ < /chǽ/ + /thɭ̀/
to mill (dehusk) rice *rice* *to beat, strike*

125) /chǽ yæ̀/ < /chǽ/ + /yæ̀/
to harvest *rice* *to cut*

126) /ayǽ chá/ < /ayǽ/ + /chá/
to sing *music* *to utter, voice*

2) There is a parallel with certain verbs of seemingly similar structure where one morpheme is bound, so that it can't be analysed as direct object + verb at the syntactic (surface) level, e.g.:

127) /ʃdɨ̀dɨ̀/ < /ʃ-/ + /dɨ̀dɨ̀/
to swim *water (bound)* *to strike*

It would be hard to analyse /ʃ-/ as an immediate constituent of a predicate. Only at the level of morphology is it an immediate constituent. By extension from /ʃdɨ̀dɨ̀/, then, we could propose a transformational source for 123)-126).

The same structural pattern of noun + verb is used to express a variety of relationships. Three more are given below.

1) 128) /byḿ̩ dzà/ < /byḿ̩/ + /dzà/
to divide *pile* *to measure*

The underlying sense here seems to be *'to measure INTO, OR BY, piles'*. The compound is derived by a transformation from an underlying instrumental expression.

129) /byḿ̩ næ/ + /dzà/ → /byḿ̩ dzà/
with piles *to measure* *to divide (by using piles)*

The transformation deletes /næ/ *'with, by'*.

2) 130) /byḿ̩ thà/ < /byḿ̩/ + /thà/
to pile up *pile* *to keep, maintain*

Here, the underlying structure would appear to translate as *'to keep AS, OR IN, piles'*. For a transformational basis, we can look to an expression with the very general locative particle /ɕ̩/ *'at, in'*. One can say:

131) /byḿ̩ ɕ̩/ + /jɔ́ ə/ → *They are in piles.*
in piles *they are*

The same kind of relationship would be expressed in:

132) /byḿ̩ ɕ̩/ + /thà ə/ → *He keeps them in piles.*
in piles *he keeps*

By transformation of 132) the compound /byḿ̩ thà/ is derived.

3) 133) /ʃcù? jɨ̀?/ < /ʃcù?/ + /jɨ̀?/
to bathe *water* *to wash, bathe*

and here, the sense seems to be *'to wash WITH water'*, a transform of an instrumental construction with /næ/ (as in 121)).

There is one more relation expressed by noun + verb, but I am quite uncertain about it in several ways; it was elicited via portraying the action.

134) /ci?dò?/ < /-ci?/ + /dò?/
to strike a match *match (bound form)* *to burn (intransitive)*

It could be my "striking" action was ignored, and I was given an expression for the end product - *a burning match*. Assuming not, though, then it is necessary to explain the peculiar grammatical relationship between /-ci?/ and /dò?/. A big question is, can this compound take another noun as subject, as the one who strikes. If it can take another subject, then does /-ci?/ express a kind of burning?

As mentioned above, the discussion of compounding is all very tentative. Suffice it (I hope) to say, further data should provide some very interesting insights.

SELECTED PHONOLOGICAL RULES FOR THAILAND LISU

E.R. HOPE

In Hope 1971 certain aspects of Lisu phonology were presented to show the impossibility of maintaining an adequately motivated unique assignment of phones to phonemes. The present article is an attempt to provide a partial generative description of that phonology so as to indicate the generative solutions to the major problems.

The set of universal distinctive features has been variously defined by different linguists and it is thus necessary to define the features adopted in this paper. Such definitions are given in informal articulatory terms and the name of the linguist responsible for the introduction of the feature into the inventory is indicated by the following abbreviations:

J = Jakobson, H = Halle, M = McCawley, W = Wang

1. THE DISTINCTIVE FEATURES

a. Syllabic (syl) (M)

This feature will distinguish true vowel segments (+) from all other segments (-). In hundreds of morphemes the correct specification of the segments for syllabicity will be provided by the MS rules, since the canonical form of morphemes is highly predictable (see section 2). The glides /y/ and /w/ are specified -syl. This treatment of these glides (rather than one which specifies them as +syl diphthongs) enables the MS rules to be generalised to an exceptionally high degree, and the analysis is thus highly motivated.

b. Consonantal (cons) (J)

True consonants are specified +cons and /h/ /ʔ/ /y/ and /w/ as -cons.

Hope, E.R. "Selected Phonological Rules For Thailand Lisu". In Dellinger, D., Hope, E., Katsura, M. and Nishida, T. editors, *Papers in Southeast Asian Linguistics No. 3.* **A-30:19-34**. Pacific Linguistics, The Australian National University, 1973. DOI:*10.15144/PL-A30.19*

Vowel specification for this feature will be provided by the blank-filling rules.

	vowels	*consonants*	y w h ?
syl	+	-	-
cons	0	+	-

c. *Obstruent* (obs) (H)

This feature separates the class of stops, affricates and fricatives (+) from the class of nasal and lateral resonants (-). Vowels are specified (-) by the blank-filling rules.

d. *Grave* (grv) (J)

Peripheral consonants are +grv and central consonants are -grv. With vowels +grv refers to back articulatory position and -grv to any position forward of this.

e. *High/Low* (M)

The feature high applies to both consonants and vowels, but low is redundantly specified (-) for consonants. A +high consonant is one articulated in any position between alveopalatal and velar, while a -high one is articulated in any position between alveolar and bilabial. With vowels the feature refers to the usual high and low articulatory positions.

	p	ph	b	f	v	k	kh	g	x	ɣ	t	th	d	s	z	ts	tsh	dz	m	n	ŋ	l
cons			+					+							+				+	+	+	+
obs			+					+							+				-	-	-	-
grv			+					+							-				+	-	+	-
high			-					+							-				-	-	+	-

	i	e	æ	ɯ	u	a
cons	-	-	-	-	-	-
grv	-	-	-	+	+	+
high	+	-	-	+	-	-
low	-	-	+	-	-	+

ɣ. *Continuant* (cont) (J) / *strident* (str) (J)

The feature cont opposes stops and affricates (-) to fricatives (+) and /h/ (+) to /ʔ/ (-).

The feature str distinguishes the affricates (+) from the stops (-) and is redundantly specified (+) for fricatives.

g. *Tense* (tns) (J)

This feature opposes aspirated to non-aspirated stops and affricates

when used with consonants, and indicates the tense:lax vowel contrast. With tense vowels the feature specification (+) is provided by the P-rules.

h. Voice (vce) (J)

The voiced:voiceless obstruent contrast is indicated by this feature.

i. Lateral (lat) (H) / *nasal* (nas) (J)

The lat feature distinguishes /l/ from other resonants which are redundantly specified +nas.

j. Flat (flt) (J) / *sharp* (shp) (J)

With vowels +flt indicates roundedness, -flt non-roundedness. The feature specification (+) is provided for /u/ by the blank-filling rules. With consonants the feature +flt indicates labialisation. The feature +shp refers to palatalisation. Only /w/ and /y/ among the -syl segments have (+) specifications for flt and shp respectively in the underlying specification of morphemes. Both palatalisation and labialisation are deemed to be derived by P-rules.

k. Retracted articulation (retrac) (M)

This feature is not specified in underlying forms, but indicates the labio-dental articulation of some forms of labialisation and the retraction of /i/ when labialised.

l. Checked (chk) (J)

This feature is specified (+) for the glottal stop by the blank-filling rules, and for glottalised vowels by the P-rules.

m. HIGH (M) / *LOW* / *RISE* (W) / *FALL* (W)

These are pitch features of which HIGH and LOW (a new feature to my knowledge) are the only distinctive ones in underlying forms. RISE and FALL specifications are provided by the P-rules.

n. The systematic phonemes

In the following charts the sequential constraints have been assumed to have applied. Such an assumption is necessary only to illustrate the true binary nature of the contrasts.

(see charts overleaf)

CONSONANTS

	k	kh	g	x	ɣ	p	ph	b	f	v	t	th	d	ts	tsh	dz	s	z	ŋ	m	n	l
syl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
obs	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
grv	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	+	+	-	0
high	+	+	+	+	+	-	-	-	-	-	0	0	0	0	0	0	0	0	+	-	0	0
cont	-	-	-	+	+	-	-	-	+	+	-	-	-	-	-	-	+	+	0	0	0	0
str	-	-	-	+	+	-	-	-	+	+	-	-	-	+	+	+	+	+	0	0	0	0
vce	-	-	+	-	+	-	-	+	-	+	-	-	+	-	-	+	-	+	0	0	0	0
tns	-	+	0	0	0	-	+	0	0	0	-	+	0	-	+	0	0	0	0	0	0	0
lat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	+

Features redundant: low
nas
flt
shp
retrac
chk
HIGH
LOW

NON-CONSONANTS

All syllabic segments will be specified for tone, and thus, since syllables rather than segments are distinguished by tone, the pitch features are not given as distinctive features of vowels in the following chart:

	vowels							*semi-vowels*			
	i	e	æ	ɯ	u	a		y	w	h	ʔ
syl	+	+	+	+	+	+	syl	-	-	-	-
grv	-	-	-	+	+	+	cons	-	-	-	-
high	+	-	-	+	-	-	vce	+	+	-	-
low	-	-	+	-	-	+	cont	+	+	+	-
							grv	-	+	0	0

Features redundant: *vowels*
obs
cons
str
tns
lat

semi-vowels
high
low
obs
cons
str

Features redundant:	*vowels*	*semi-vowels*
	flt	tns
	shp	lat
	retrac	flt
	chk	shp
	nas	retrac
	cont	chk
	vce	nas

In the above schema it is possible to posit six systematic vowel phonemes, as opposed to the seven-, eight-, or ten-vowel systems of Hope 1971.

The vowels which have been excluded from the phoneme inventory are /ɨ/ which is now accounted for as a retracted form of underlying /i/; and /ɔ/ which is now accounted for as the phonetic realisation of underlying /aw/. The "central" vowel /ə/ is now the high back vowel /ɯ/. Motivation for this analysis comes from the fact that the rules needed to arrive at the correct phonetic realisation are independently required for other aspects of the phonology, i.e. the rules are generalised, not *ad hoc*. The retraction rule is needed to account for labiodental articulation of labialisation, and the rule producing [ɔ] from /aw/ is the rule which is needed to account for all other types of labialisation.

2. MORPHEME STRUCTURE RULES

a) *Sequential constraints*

The constraints on the structure of morphemes are very strict, and some of these constraints are related to the structure of syllables. The relevant generalisations about morphemes and their syllable structure are covered by the following rules (the rules as presented are not properly ordered):

(i) $\neq \neq \longrightarrow \neq (S)^3\ S \neq$

Any morpheme consists of never more than four syllables and never less than one syllable.

(ii) $S \longrightarrow \begin{bmatrix}-\text{syl}\\+\text{cons}\end{bmatrix}\left(\begin{bmatrix}-\text{syl}\\-\text{cons}\end{bmatrix}^2\right)\ [+\text{syl}]\left(\left\{\begin{bmatrix}-\text{syl}\\-\text{cons}\end{bmatrix}\left(\begin{bmatrix}-\text{syl}\\-\text{cons}\\-\text{vce}\\-\text{cont}\end{bmatrix}\right),\ \begin{bmatrix}+\text{cons}\\-\text{obs}\\-\text{lat}\end{bmatrix}\right\}\right)$

In its underlying form a syllable consists of an initial consonant, followed by up to two optional semi-vowels, a vowel, and either an optional nasal final consonant, or an optional semi-vowel followed by an optional glottal stop.

Thus for two-segment monosyllabic morphemes the specification of the features "syllabic" and "consonantal" is entirely redundant. If morphemes are marked in the lexicon for the number of their component syllables, then in bisyllabic four-segment, tri-syllabic six-segment and quadri-syllabic eight-segment morphemes all segments are specified for the syl and cons features by the above rule. The rule also specifies that vowels never occur contiguous to each other, that only semi-vowels, nasal consonants and /?/ occur as final [-syl] segments. Thus consonants only occur contiguous to one another in polysyllabic morphemes or across morpheme boundaries, and in all such cases the first consonant of the contiguous pair is a nasal.

Note the high degree of redundancy rule (ii) provides in the specification of the following morphemes - the assumption is that all morphemes are in fact marked mono, bi, tri, or quadri to indicate the number of component syllables:

	t e	t e n	t y e	t y e ?	t y w e	t y w e ?
syl	0 0	0 0 0	0 0 +	0 0 + 0	0 0 0 +	0 0 0 + 0
cons	0 0	0 0 +	0 0 0	0 0 0 -	0 0 0 0	0 0 0 0 -

	? a p a	? a p y a ?	tsh a ? p y a ?
syl	0 0 0 0	0 0 0 0 + 0	0 + 0 0 0 + 0
cons	0 0 0 0	0 0 0 - 0 -	0 0 - 0 - 0 -

In the case of /? a p y a ?/ (marked in the lexicon as bi-) the fourth and sixth segments are predictably -syl since the fifth segment is +syl and two +syl segments cannot occur side by side. Since a syllable must have a consonant as its first segment, segments four, five and six are not a complete syllable. Since a syllable is minimally a CV sequence and an initial C is required for the second syllable, the first three segments are predictably CVC.

In the case of /t s h a ? p y a ?/ (bi-) the initial segment is predictably specified and the /p/ segment is predictable as $\begin{bmatrix}-\text{syl}\\+\text{cons}\end{bmatrix}$ since rule (ii) indicates that there are no sequences of more than two $\begin{bmatrix}-\text{syl}\\-\text{cons}\end{bmatrix}$ segments.

Note also the following:

	t y a m y w e ? (bi-)
syl	0 0 + 0 0 0 + 0
cons	0 0 0 + - 0 0 0

The specifications of segments 1 and 2 are provided by the rule since morphemes must have an initial consonant and two contiguous consonants may not occur in one syllable. The fact that segments 4 and 5 are marked [+cons] and [-cons] respectively indicates that segment 4 must be the initial C of the second syllable, since if the [+cons] segment were the final of the first syllable, the next syllable would then commence with a [-cons] segment and the morpheme would not be well-formed. Similarly the fifth segment could not be the final of the first syllable since no segment may occur, in the same syllable, after a post-vocalic consonant.

The principles of the above example apply to morphemes with three and four syllables as well. Note the following:

	m	w	i	s	a	l	w	g	w	u	(quad)
syl	0	0	0	0	0	0	0	0	0	+	
cons	0	0	0	0	0	0	0	0	-	0	

The first segment is predictably a consonant, and thus the second is specified as a semi-vowel since the third is [+syl] and neither consonants nor vowels occur in pairs. The eighth segment can only be specified as $\begin{bmatrix}-\text{syl}\\+\text{cons}\end{bmatrix}$ since (i) no initial consonant has yet been provided for the final syllable; (ii) the alternative specification of segment 8 as $\begin{bmatrix}-\text{syl}\\-\text{cons}\end{bmatrix}$ is ruled out since then segment 7 would be the consonant but only three intervening segments (4, 5 and 6) would remain and two syllables are still to be provided, and they require a minimum of four segments. The initial consonant of the final syllable is thus segment 8 and the remaining segments 4, 5, 6 and 7 are CVCV.

The extremely high degree of predictability about the "shape" of morphemes is only possible if palatalised consonants are treated as sequences of consonant-plus-semi-vowel rather than as unit phonemes or consonant-plus-/i/ sequences. The phoneme /y/ is analysed as a medial glide and the phonetic [y] initial is treated as a sequence /zy/. This treatment is the most economical according to the simplicity metric, since it involves by far the least amount of specification of morpheme segments. A new P-rule is introduced but (ii) is preserved. Thus the choice of the C+/y/ solution over the unit solution has high motivation. Similarly if [ö] is treated as a unit phoneme rather than as a /we/ sequence, much of the generality of rule (ii) is lost. Phonetic [w] initial is deemed to be a /yw/ phoneme sequence for the same reasons.

(iii) [+cons] ⟶ [-high] / - [-grv]

Velar consonants do not occur before front vowels or /y/.

(iv) $\begin{bmatrix}+\text{obs}\\+\text{cont}\end{bmatrix}$ ⟶ [-grv] / - $\begin{bmatrix}-\text{grv}\\-\text{high}\end{bmatrix}$,· i.e. Bilabial fricatives do

not occur before /y/ or /i/.

$$\text{(v)}\quad [+\text{cons}] \longrightarrow [-\text{grv}] \;/\; - \begin{bmatrix} -\text{syl} \\ -\text{grv} \end{bmatrix} \begin{bmatrix} +\text{syl} \\ \left\{ \begin{matrix} -\text{grv} \\ -\text{low} \end{matrix} \right\} \end{bmatrix},$$

i.e. if /y/ is followed by a vowel other than /a/ then the consonant preceding /y/ is specified [-grv]. Thus either bilabials or alveolars may occur in the environment /-ya/ but only alveolars occur with any other /yV/ sequence.

$$\text{(vi)}\quad [+\text{syl}] \longrightarrow \begin{bmatrix} -\text{grv} \\ -\text{LOW} \end{bmatrix} / \begin{bmatrix} -\text{syl} \\ +\text{cons} \end{bmatrix} \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix} \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix} -$$

i.e. only /i/ or /e/ occur after a sequence of consonant plus two semi-vowels.

$$\text{(vii)}\quad [-\text{syl}] \longrightarrow [-\text{grv}] \;/\; [+\text{cons}] - \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix}$$

$$\text{(viii)}\quad [-\text{syl}] \longrightarrow [+\text{grv}] \;/\; [+\text{cons}]\ [-\text{syl}] -$$

i.e. in a sequence of consonant and two semi-vowels the first semi-vowel is /y/ and the second /w/.

$$\text{(ix)}\quad \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix} \longrightarrow [+\text{high}]$$

$$\text{(x)}\quad [+\text{cons}] \longrightarrow [-\text{grv}] \;/\; - \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix} \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix}$$

$$\text{(xi)}\quad [+\text{syl}] \longrightarrow \left\{ \begin{bmatrix} +\text{grv} \\ -\text{high} \end{bmatrix}, \begin{bmatrix} -\text{grv} \\ -\text{low} \end{bmatrix} \right\} / \begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix} -$$

Neither /ɯ/ or /æ/ follow /y/ or /w/.

$$\text{(xii)}\quad [+\text{syl}] \longrightarrow [-\alpha\ \text{grv}] \;/\; \begin{bmatrix} +\text{cons} \\ -\text{obst} \\ +\text{grv} \\ \alpha\ \text{high} \end{bmatrix} \begin{bmatrix} -\text{syl} \\ +\text{grv} \end{bmatrix} -$$

Front vowels do not occur after /ŋw/ sequences and back vowels do not occur after /mw/ sequences.

$$\text{(xiii)}\quad \begin{bmatrix} +\text{cons} \\ +\text{grv} \end{bmatrix} \longrightarrow [-\alpha\ \text{high}] \;/\; - \begin{bmatrix} -\text{syl} \\ +\text{grv} \end{bmatrix} \begin{bmatrix} +\text{syl} \\ \alpha\ \text{high} \\ -\alpha\ \text{low} \end{bmatrix}$$

High vowels do not occur after velar-plus-/w/ sequences and low vowels do not occur after labial-plus-/w/ sequences.

(xiv) $\begin{bmatrix}+\text{cons}\\-\text{high}\\-\text{grv}\end{bmatrix} \longrightarrow \left\{\begin{bmatrix}+\text{obs}\\+\text{str}\end{bmatrix}, [-\text{obs}]\right\} / - \begin{bmatrix}-\text{syl}\\+\text{grv}\end{bmatrix} \begin{bmatrix}+\text{syl}\\+\text{low}\end{bmatrix}$

Alveolar non-affricate stops do not occur in front of /w/-plus-low vowel sequences.

Examples of MS rules in operation

	p i	t e	t y e
syl	0 0	0 0	0 0 +
cons	0 0	0 0	0 0 0
grv	+ -	- -	0 - -
high	0 +	0 -	0 0 -

Segments are specified for syl and cons by rule (ii); consonants are specified for high by rule (iii); /y/ is specified for high by rule (ix); /t/ in /tye/ is specified for grv by rule (v).

	k w a	t w e	t y w e
syl	0 0 +	0 0 +	0 0 0 +
cons	0 0 0	0 0 0	0 0 0 0
grv	0 + 0	- + -	0 0 0 0
high	0 0 0	0 0 -	0 0 0 -
low	0 0 +	0 0 0	0 0 0 0

The cons and syl specifications are provided by rule (ii). The initial in /kwa/ is specified by rule (xiii) for high and the grv and low specifications are provided by the blank-filling rules. All semi-vowels are specified for high by rule (ix). With /twe/ after rule (ii) all remaining blanks are provided by the blank-filling rules. With /tywe/ the initial is marked for grv by rule (x), after rule (ii) has provided syl and cons specifications for all segments. /y/ and /w/ are specified for graveness by rules (vii) and (viii) and for high by rule (ix). The vowel specifications for low and grv are provided by rule (vi).

One of the problems arising out of the rules as proposed above concerns the proper specification of /h/ and /?/. In their distribution they are clearly consonants and rules such as (ii), (v) and (ix) are only correct if /?/ and /h/ are included as segments specified as +cons, however, there arise problems concerning the correct phonetic representations of these two phonemes. If the full specification of /?/ and /h/ is given as

	/?/	/h/
syl	-	-
cons	+	+
vce	-	-
cont	-	+

then the representation is misleading in a number of respects. /h/ is phonetically a voiceless vowel, and the oral articulatory organs adopt the articulation position of the following vowel, as is the case with /?/.

(continued overleaf)

	/ʔ/	/h/
grv	-	-
high	-	-
low	-	-
tns	+	-
obs	-	-

How to reflect these facts with segments marked [+cons] is inconceivable.

Thus when /h/ (which is nasalised with back vowels) is specified in a surface string as

$$[\tilde{h}]$$
$$\begin{bmatrix} -\text{syl} \\ +\text{cons} \\ +\text{cont} \\ -\text{vce} \\ -\text{obs} \\ -\text{grv} \\ +\text{high} \\ -\text{lat} \\ +\text{nas} \end{bmatrix}$$

this is in fact the phonetic representation of a voiceless palatal nasal consonant. Thus if /h/ and /ʔ/ are specified as [+cons] in the underlying form, in order to preserve the highly generalised MS rules given, then a later rule is required to convert [+cons] to [-cons].

This rule should apply as the last of the sequential constraints in order to maintain the greatest generality of both the sequential constraints and the blank-filling rules. Adopting this solution is to group /h/ and /ʔ/ with the alveolar consonants in the underlying forms. Rule (ii) then requires slight alteration since both final /n/ and /ʔ/ are +cons.

The altered rule would be

$$\text{(ii)}\quad S \longrightarrow \begin{bmatrix} -\text{syl} \\ +\text{cons} \end{bmatrix} \left(\begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix}^2 \right) [+\text{syl}] \left(\begin{bmatrix} -\text{syl} \\ -\text{cons} \end{bmatrix} \right) \left(\begin{bmatrix} -\text{syl} \\ +\text{cons} \end{bmatrix} \right)$$

Additional rules would then indicate that the final [+cons] can only be /ʔ/ or /n/, but if the option glide occurs then only /ʔ/.

b) *The Blank-filling rules*

(i) $[+\text{obs}] \longrightarrow \begin{bmatrix} -\text{lat} \\ -\text{nas} \end{bmatrix}$

(ii) $\begin{bmatrix} +\text{cons} \\ -\text{obs} \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{cont} \\ +\text{vce} \\ -\text{tns} \\ -\text{strid} \end{bmatrix}$

(iii) $\begin{bmatrix} +\text{cons} \\ -\text{grv} \end{bmatrix} \longrightarrow [-\text{high}]$

(iv) $[+\text{cons}] \longrightarrow [-\text{low}]$

(v) $\begin{bmatrix} +\text{cons} \\ +\text{vce} \end{bmatrix} \longrightarrow [-\text{tns}]$

(vi) $\begin{bmatrix} +\text{cons} \\ +\text{cont} \end{bmatrix} \longrightarrow [-\text{tns}]$

(vii) $\begin{bmatrix} -\text{syl} \\ -\text{cons} \\ -\text{vce} \end{bmatrix} \longrightarrow [-\text{grv}]$

(viii) $\begin{bmatrix}-\text{syl}\\-\text{cons}\\-\text{grv}\\+\text{vce}\end{bmatrix} \longrightarrow \begin{bmatrix}-\text{flt}\\+\text{shp}\end{bmatrix}$

(ix) $\begin{bmatrix}-\text{syl}\\-\text{cons}\\+\text{grv}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{flt}\\-\text{shp}\end{bmatrix}$

(x) $\begin{bmatrix}-\text{syl}\\-\text{cont}\\-\text{cont}\end{bmatrix} \longrightarrow [+\text{chk}]$

(xi) $\begin{bmatrix}+\text{syl}\\+\text{grv}\\-\text{high}\\-\text{low}\end{bmatrix} \longrightarrow [+\text{flt}]$

(xii) $[+\text{syl}] \longrightarrow \begin{bmatrix}-\text{cons}\\+\text{cont}\\+\text{vce}\end{bmatrix}$

(xiii) $\begin{bmatrix}+\text{HIGH}\\+\text{LOW}\end{bmatrix} \longrightarrow [+\text{FALLING}]$

The above is a sample of the rules - only those rules which most closely concern the P-rules have been selected.

3. PHONOLOGICAL RULES

A. *PRE-CYCLE RULES*

(a) Stress assignment

The assignment of primary stress is difficult to state without a detailed explanation of the syntactic component of Lisu grammar. Surface strings from that component are assigned linear order by topicalisation and focus rules (see Hope 1972) and primary stress is assigned to the main verb if it is not part of the major presupposition of the sentence, and to the head of the focus NP if the main verb is presupposed.

1. ásа nya thá tya -a
   Asa TOPIC *here is* -DECLARATIVE
   'Asa is here.'

2. ásа nya tha tyǎ -ạ
   Asa TOPIC *here is* -DECLARATIVE
   'Asa is here.'

In (1) where the stress is on tha *'here'* the sentence would be the answer to the question *'Where is Asa?'*. In (2) where the stress is on tyǎ *'is'* the sentence would be the answer to the question *'What is Asa doing?'*.

Secondary stress is assigned to the first syllable of the head noun of the component NPs and of the head verb of the sentence if these have not already received primary stress.

Tertiary stress is assigned to syntactic markers. In the case of bisyllabic markers the syllable to be stressed is specified by the output of the syntactic component.

(b) Loss of finals

$$[+\text{syl}] \longrightarrow \begin{bmatrix}+\text{syl}\\ \alpha\ \text{nas}\\ \beta\ \text{chk}\\ \gamma\ \text{flt}\\ \delta\ \text{shp}\end{bmatrix} / - \begin{bmatrix}-\text{syl}\\ \alpha\ \text{nas}\\ \beta\ \text{chk}\\ \gamma\ \text{flt}\\ \delta\ \text{shp}\end{bmatrix}$$

$[-\text{syl}] \longrightarrow [\text{null}] / - \not{A}\not{A}^{n}|$ where /n/ is not less than one

Final /y/ /w/ /n/ or /ʔ/ are deleted if they are other than phrase-final, after the preceding vowel has been palatalised, labialised, nasalised or glottalised respectively. The first part of the rule (above) is in fact cyclical.

(c) *Verbal tone change*

The heightening of the pitch of mid-tone verbs with tense final vowel when followed by the declarative sentence final marker /-ạ/ is accomplished by a pair of rules.

$$\begin{bmatrix}+\text{syl}\\+\text{chk}\\-\text{HIGH}\\-\text{LOW}\end{bmatrix} \longrightarrow \begin{bmatrix}-\text{chk}\\+\text{HIGH}\end{bmatrix} \;/\; - \not\prec \text{DEC} \not\succ$$

$$\begin{bmatrix}+\text{syl}\\-\text{chk}\\-\text{HIGH}\\-\text{LOW}\end{bmatrix} \longrightarrow [+\text{chk}] \;/\; - \not\prec \text{DEC} \not\succ$$

B. *LABIALISATION*

(i) $[+\text{syl}] \longrightarrow \begin{bmatrix}+\text{strid}\\+\text{flt}\\+\text{retrac}\end{bmatrix} / \begin{bmatrix}-\text{syl}\\-\text{cons}\\+\text{grv}\end{bmatrix} \begin{bmatrix}-\\+\text{grv}\\-\text{low}\\-\text{grv}\\+\text{high}\end{bmatrix}$

(ii) $\begin{bmatrix}+\text{syl}\\-\text{grv}\\-\text{high}\end{bmatrix} \longrightarrow [+\text{flt}] / \begin{bmatrix}+\text{cons}\\-\text{high}\end{bmatrix} \begin{bmatrix}-\text{syl}\\-\text{cons}\\+\text{high}\end{bmatrix} -$

(iii) $[+\text{cons}] \longrightarrow [+\text{flt}] / - \begin{bmatrix}-\text{syl}\\-\text{cons}\\+\text{grv}\end{bmatrix}$

(iv) $\begin{bmatrix}-\text{syl}\\-\text{cons}\\+\text{grv}\end{bmatrix} \longrightarrow [\text{null}] / - \begin{bmatrix}+\text{syl}\\+\text{flt}\end{bmatrix}$

Rule (i) indicates that labialisation of /i/ or /u/ is accompanied by labiodental (rather than labial) friction, and by retraction of the position of the vowel, yielding [-ɣ̣$^{\text{ɨ}}$] and [-ɣ̣$^{\text{u}}$] respectively.

Rule (ii) results in the rounding of /e/ after sequences of non-velar consonant plus /w/. Rule (iii) indicates that the consonant before /w/ is labialised. Rule (iv) deletes the /w/ segment if rules (i) or (ii) have applied.

C. *PALATALISATION*

(v) $[+\text{cons}] \longrightarrow [+\text{shp}] / - \begin{bmatrix}-\text{syl}\\-\text{cons}\\-\text{grv}\end{bmatrix}$

(vi) $\begin{bmatrix}+\text{cons}\\-\text{high}\\-\text{grv}\end{bmatrix} \longrightarrow [+\text{high}] \;/\; \begin{bmatrix}-\\+\text{shp}\end{bmatrix}$

(vii) $\begin{bmatrix}+\text{cons}\\+\text{obst}\\+\text{high}\\+\text{shp}\end{bmatrix} \longrightarrow [+\text{str}] \;/\; \left\{\begin{matrix}(-\begin{bmatrix}-\text{syl}\\-\text{cons}\\-\text{grv}\end{bmatrix}\begin{bmatrix}+\text{syl}\\-\text{high}\\-\text{low}\end{bmatrix})\\ -\begin{bmatrix}-\text{syl}\\-\text{cons}\\-\text{grv}\end{bmatrix}\begin{bmatrix}+\text{syl}\\-\text{grv}\\+\text{high}\\+\text{str}\\+\text{flt}\end{bmatrix}\end{matrix}\right\}$

Palatal stops are affricated optionally if a /ye/ or /yu/ sequence follows; but are always affricated if /y/ plus labialised /i/ [$y^{\dagger}_{\downarrow}$] follows.

(viii) $\begin{bmatrix}-\text{syl}\\-\text{cons}\end{bmatrix} \longrightarrow [\text{null}] \;/\; \begin{bmatrix}+\text{cons}\\+\text{high}\\+\text{shp}\end{bmatrix} -$

The /y/ segment is deleted if both rules (v) and (vi) have applied.

(ix) $\begin{bmatrix}+\text{syl}\\+\text{low}\end{bmatrix} \longrightarrow [-\text{grv}] \;/\; \begin{bmatrix}-\text{cons}\\-\text{grv}\end{bmatrix} -$

/a/ is fronted after /y/ or front vowels.

(x) $\begin{bmatrix}+\text{cons}\\+\text{obs}\\+\text{str}\\-\text{grv}\\-\text{cont}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{shp}\\+\text{high}\end{bmatrix} \;/\; - \begin{bmatrix}-\text{cons}\\+\text{grv}\\+\text{flt}\end{bmatrix}$

Alveolar affricates become palatal before /w/ or /u/. This rule is optional.

D. REMAINING RULES

(xi) $[+\text{syl}] \longrightarrow \begin{bmatrix}+\text{str}\\-\text{flt}\\+\text{retrac}\end{bmatrix} \;/\; \begin{bmatrix}+\text{cons}\\+\text{str}\end{bmatrix} \begin{bmatrix}-\\+\text{high}\\-\text{grv}\end{bmatrix}$

This rule accounts for [$sz^{\dagger}_{\downarrow}$] [$tsz^{\dagger}_{\downarrow}$] etc. which have underlying forms such as /si/ /tsi/ and so on. Thus the contrasts between the forms [$sz^{\dagger}_{\downarrow}$] [$\int z^{\dagger}_{\downarrow}$] [$\int i$] [$tsz^{\dagger}_{\downarrow}$] and [$t\int z^{\dagger}_{\downarrow}$] are accounted for as follows (if the MS rules are assumed):

	s i	s y w i	s y i	ts i	t y w i
syl	- +	- - - +	- - +	- +	- - - +
cons	+ -	+ - - -	+ - -	+ -	+ - - -
grv	- -	- - + -	- - -	- -	- - + -
high	- +	- + + +	- + +	- +	- + + +
low	- -	- - - -	- - -	- -	- - - -

(continued overleaf)

	s i	s y w i	s y i	ts i	t y w i
obst	+ -	+ - - -	+ - -	+ -	+ - - -
cont	+ +	+ + + +	+ + +	- +	- + + + +
str	+ -	+ - - -	+ - -	+ -	- - - -
flt	- -	- - + -	- - -	- -	- - + -
shp	- -	- + - -	- + -	- -	- + - -
vce	- +	- + + +	- + +	- +	- + + +

Rule (xi) converts the /i/ into syllable [z̩] in the case of /si/ and /tsi/.

Rules (v) and (vi) convert /s/ into [ʃ] in the case of /syi/ and rule (viii) deletes the /y/ segment.

In the case of /sywi/ it becomes apparent that to arrive at the correct specifications with the most generalised rules, rules (v) and (vi) apply before rules (i), (iii), (iv). After (v) and (vi) /sywi/ is transformed to [ʃwi], which rules (i), (ii) and (iv) operate on, reducing to two segments with the following specifications:

	ʃʷ	vʲ
syl	-	+
cons	+	-
obs	+	-
str	+	+
grv	-	-
high	+	+
low	-	-
flt	+	+
shp	+	-
retrac	-	+

Rule (xi) converts the +flt of the [+syl] segment to -flt changing the quality of the segment to that of a retracted high front vowel articulated with friction. Thus the non-distinctive nature of the lip protrusion mentioned in Hope 1971 (p.69) is accounted for by the fact that it is part of the initial segment rather than the vowel. Thus too, Roop's analysis of the morpheme as /swɨ/ can be seen to be at least possible since the palatalisation of the initial could be achieved by modification of rule (x) so as to make the rule optional with consonants marked [-cont] but obligatory with those marked [+cont]. This solution is, however, less economic in terms of the simplicity metric.

(xii) [+LOW] ⟶ [+FALL] / $\left[\begin{smallmatrix}-\\ +\text{chk}\end{smallmatrix}\right]$

Low tone becomes a low falling tone with glottalisation.

(xiii) [+HIGH] $\longrightarrow$ $\begin{bmatrix} +\text{RISE} \\ +\text{tns} \\ -\text{chk} \end{bmatrix}$ / $\begin{bmatrix} - \\ +\text{chk} \end{bmatrix}$

High tone becomes a high rising tone with tenseness of the vowel when the syllabic segment is specified [+chk]. The accuracy of this designation has to be investigated further. Spectrographic analysis has indicated that the high rising tone is accompanied by a vowel glide to a slightly higher articulatory position, with retraction of the initial consonant.

(xiv) $\begin{bmatrix} -\text{HIGH} \\ -\text{LOW} \end{bmatrix}$ $\longrightarrow$ [+tns] / $\begin{bmatrix} - \\ +\text{chk} \end{bmatrix}$

Vowels with mid tone and [+chk] specification become tense vowels. These are characterised by glottal tension resulting in "creakiness" as opposed to the rapid glottal "trills" of glottalised vowels.

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PHONEMES OF THE ALU DIALECT OF AKHA*

MAKIO KATSURA

This paper is a portion of the result obtained from one year's investigation of Akha in Northern Thailand.

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Thailand

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The Centre for Southeast Asian Studies of Kyoto University: Bangkok Branch Office; Faculty of Lettres, Kyoto University (the Linguistic Group).

In addition, I am very grateful to many persons who kindly helped me in this investigation. Finally, my special thanks go to the people of the villages where I stayed during my investigation.

The purpose of the investigation was to describe the grammatical structure of Akha; however, this paper deals with the phonemic system only. The morphemes and the syntax and other subjects will be treated on other occasions. This paper is just an interim report and many rectifications and insertions will be added afterwards. For the place

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names appearing in the paper, please refer to the map. [Map not included in the translation.]

0. THE AKHA TRIBE AND THE AKHA LANGUAGE

0.1. In addition to the tribes of Thai, various tribes inhabit Thailand; they are 1) Thai, 2) Tibeto-Burmese, 3) Mon-Khmer, 4) Karen, 5) Meo-Yao; plus the Chinese and Indians.

Among the languages belonging to the group of Tibeto-Burmese mentioned above, Akha, Lahu Na, Lahu Shi, Lahu Ni, Lisu and Bisu are spoken in Thailand. According to the classification by Robert Shafer, all of them are considered to be closely related to the Burmish-Loloish group. Speakers of these languages live mainly in mountainous regions of Northern Thailand and practise slash and burn agricultural techniques.

Besides Thailand, the Akha live in Yünnan Province in China, the Shan States in Burma, and in northern Laos. It is believed that the Akha tribe moved to Thailand from Burma not very long ago; the area of Thailand inhabited by the tribe is very limited. At the present it includes only four districts in the northernmost part of Chiengrai province, namely: Maesai, Maechan, Chiengsaen and Maesurai. A small number of them moved to Maesurai district from Maesai only recently, during the period of the investigation, and it seems that this district is the southern boundary of the distribution of the Akha tribe. According to Gordon Young, the number of Akha people in Thailand is about 25,200, but it seems that some villages were not included in his statistics, and therefore, the actual number must be slightly larger.

It is said that the number of Akha people in the Shan States in Burma, with Kengtung at its centre, is over 40,000; in Yünnan Province in China there are about 48,700, and in northern Laos about 4500. But I think that the exact number remains unknown, since the Akha prefer to live in very inaccessible, remote areas. They say that the Akha tribe came to Thailand about twenty years ago. But the movement continues even now, and quite a few of my acquaintances said to me that they came from Burma only recently. It was not unusual during my stay to meet small groups of Akha people who had just come over the border. Even when they settle down in Thailand, they cross the border to visit their relations, and their relations do the same.

It is hard to say whether this tendency is the specific reason why they do not move southward from the border area in Northern Thailand; at least there is no sign of such a movement now.

0.2. The Akha language is not subdivided; it has no subclassifications

like the Lahu has, which is divided into Lahu Ni and Lahu Na. Akha is just called Akha everywhere. Because of this, it is apt to be considered as a unitary language. But when you do field work or read the available reports (though there are very few of them), you find that it is not always true. Considering that the Akha live in vast areas and very inaccessible places, it is likely that there are various Akha languages, though they are all just called Akha. But actual classification of groups of dialects would necessitate collection of data in a much wider area. Even if we limit the area to Thailand, it is not too much to say that the language varies a little from one village to another. I collected some samples from several villages, in addition to the two villages where I did my main investigation.

The samples show that the languages spoken in two villages only 10-20 kilometres apart are slightly different. It is impossible to say, at present, what relation exists between them. That is why in this paper the Akha language discussed is only the dialect spoken in Alu village in Northern Thailand.

Alu village is situated in a mountainous area 55 kilometres northwest of Chiengrai City. There are about 400 people in this village, and it must be among the very largest villages of the hill tribes.

I also investigated the Akha dialect of Saenchai village which lies 5 kilometres south of Alu village. The differences between these two dialects will be dealt with briefly in the final part of this paper.

The Akha people can scarcely speak Thai. Even in Saenchai village which is the only village that has a primary school run by the Border Police, few villagers speak Thai. Generally speaking, when they contact Thai people, they speak Shan or the dialect of Northern Thai which is modified to Shan. Among the hill tribes, Lahu Na is the most popular [lingua franca], followed by Shan and the Chinese dialect spoken in Yünnan. Among those who have come from Burma lately, quite a few can speak Burmese.

In Alu village, no Thai, not even the Northern dialect, is spoken, and I had to make my investigation with the help of a young Shan who came from Burma and could speak Akha, Lahu Na, Burmese and English, besides Shan. I was assisted mainly by a nineteen year old informant whose name was Apa. However, I checked the data with other villagers at every opportunity and tried to speak the Akha language myself in order to get natural data.

The Akha language is unwritten as are the languages of the other hill tribe minorities. In Burma, it is reported that Christian missionaries have made an orthography for Akha using Roman letters, and that the Bible has been published. But it seems that very few Akha people, in

limited areas, can use this orthography. Of course, there is no orthography of the Akha language in use in Thailand, and an analysis of Akha has never been done in Thailand. For the Akha in Burma and Laos, several reports have been issued. For the Akha in Yünnan it is supposed that Chinese linguists have carried out investigations, but there is no available data here; therefore this paper is based on the data obtained in my spot survey and does not refer to any other data or articles.

1. PHONEMES OF THE ALU DIALECT OF AKHA

1.1. *A RÉSUMÉ*

The maximum unit treated in this paper is the syllable. The treatment of the relation of one syllable to another, or of linguistic units bigger than the syllable, will be deferred to other occasions.

I think the most fundamental problem in the process of consolidating data obtained from on-the-spot-investigations is to deduce, firstly, the minimum linguistic unit. A syllable of Akha is a solid form, the same as a syllable of some other familiar languages, and it is also a morpheme. Therefore, it is reasonable that the syllable should be treated as the minimum unit in the explanation of the phonemes of Akha. A syllable of Akha consists of phonemes, which can be subdivided into consonants, vowels and tones. I will explain these in the context of syllables.

1.2. *SYLLABIC STRUCTURE*

The maximum syllabic structure of Akha is expressed by the following formula:

$$Sy = \overbrace{C_1\ (C_2)\ V\ (C_3)}^{T}$$

In this formula, Sy means syllable, T means tone, C means consonant, and V means vowel. Letters in parentheses express "the element which is not indispensable" and letters without parentheses express "indispensable elements".

When each of these [syllabic positions] is filled by an element we have a syllable of Akha.

For example, C_1 = /m/; (C_2) = /j/; V = /o/; T = Falling tone (this is shown by the symbol /ˋ/). Sy = /mjòˋ/ *'monkey'*.

I will describe the syllabic structures of the Alu dialect of Akha according to this formula and give examples for each.

$$Sy = \begin{cases} \text{i.} & C_1VT & /s\grave{i}/ & \textit{blood} \\ \text{ii.} & C_1C_2VT & /bj\grave{a}/ & \textit{honeybee} \\ \text{iii.} & C_1VC_3T & /m\grave{ɔ}ŋ/ & \textit{horse} \\ \text{iv.} & C_1C_2VC_3T & /('a)\text{-}bj\grave{ɔ}ŋ/ & \textit{colleague} \end{cases}$$

In the next part, I will describe each element which constructs syllables.

1.3. *SYLLABLE-INITIAL CONSONANTS*

In this paper, syllable-initial consonants are shown as C_1, or $C_1(C_2)$- in the formula in 1.2. The elements which can occur as C_1- or $C_1(C_2)$- (e.g. /j/) are those shown in the following table.

The table shows that there is not only a contrast of voiced and voiceless qualities, but also, in the case of the voiceless feature, there is contrast of the aspirated and unaspirated features for stop consonants.

For nasals, all are voiced, and there is no contrast between aspirated and unaspirated; the contrast between nasals is shown only by the point of articulation. The same is true for oral continuants. For fricatives, there is no contrast between aspirated and unaspirated, but there is a contrast between voiced and voiceless.

All of the consonants can fill the position of C_1; however, only /-j-/ mentioned above can fill the position of -(C_2)-.

In fact, only /pj-; phj-; bj; mj/ ever occur as $C_1(C_2)$-. That is to say, when -(C_2)- is filled in $C_1(C_2)$-, C_1 must be one of the bilabials.

			Labial	*Dental*	*Palatal*	*Velar*	*Etc.*
Stop	voiceless	unaspirated	p	t	c	k	
	"	aspirated	ph	th	ch	kh	
	voiced	unaspirated	b	d	ɟ	g	'
Nasal	voiced	unaspirated	m	n	ɲ	ŋ	
Fricative	voiceless	unaspirated		s		x	h
	voiced	unaspirated				ɣ	
Oral continuant	voiced	unaspirated		l	j		

Syllable-initial consonants

Some examples of the contrasts between consonants in the positions $C_1(C_2)$- are as follows:

/pà-tɛ/	*rain coat*	/phá-'ɯ́/	*to borrow money*
/bà-ba/	*cheek*	/ma-sà/	*bamboo*
/pjà-'ɯ́/	*to scratch*	/phjà-'ɯ́/	*feverish*
/bjà/	*honeybee*	/mjà-'ɯ́/	*much*
/ta-'ɯ́/	*salty*	/thà-'ɯ́/	*put on*
/da-ɲum/	*a flight of steps*	/nà-ja/	*earring*
/ba-la/	*moon*	/ca-thɔ̀ŋ/	*navel*
/chá-chà/	*little finger*	/ɲà-ǹì/	*firefly*
/ǹa-'ɯ́/	*wise*	/jà/	*child*
/ka/	*crossbow*	/kha-'ɯ́/	*to drop off*
/ga-ma/	*way*	/ŋà/	*five*
/xà-mɛ/	*mouth*	/ɣà/	*power*
/sà-ɲí/	*meat*	/jɔ-'à/	*wet*
/ha-khá/	*bamboo basket*		

1.4. *SYLLABLE-MEDIAL VOWELS*

These are elements which can fill the slot V in the formula in 1.2.

Eleven vowel contrasts can be observed in the Alu dialect, which are classified by position of the tongue ([longitudinal position] and height) and shape of the lips (see the following table).

The special vowel /m̩/ in this table is not a vowel but a consonant in terms of phonemics; however when we regard it in terms of the distributional criteria of syllables, it is reasonable to put it with the vowels. Vowels and consonants in this paper are not classified by the character of the phoneme itself, but are classified by their distribution and function in syllables.

	High	*Mid*	*Low*	*Etc.*
Front vowel unrounded	i	e	ɛ	
Front vowel rounded		ø		
Back vowel unrounded	ɯ	ə	a	
Back vowel rounded	u	o	ɔ	
Special vowel				m̩

/m̩/ always occurs as the form of ['m̩] or [m̥ m̩], and never as the form /m̩V/. When we regard ['] in ['m̩] and [m̥] in [m̥ m̩] as /'/, /h/, it is possible to describe ['m̩] as /'m̩/, and [m̥ m̩] as /hm̩/.

And when we regard /'/ and /h/ in these forms as syllable-initial consonants C_1, it is seen that /m̩/ fills the position of V.

In the Alu dialect, phonemic combinations of vowels are not present nor the contrast of long and short vowels. Examples of vowel contrasts are as follows:

/'à-lì/	*boy*	/'ɔ̀-lø-ǎì/	*plump man*
/le-'ɯ́/	*go (upward)*	/lɛ/	*market*
/lu-dù/	*well*	/lo/	*vehicle*
/lɔ-bà/	*river, stream*	/lá-'ɯ́/	*come*
/jɔ-là/	*brown*	/'m̩/	*heaven, sky*

1.5. *SYLLABLE-FINAL CONSONANTS*

These are elements which fill the slot -(C_3). In Akha, elements which fill this position are extremely limited. In the Alu dialect, only /m,ŋ,j/ occur in the position -(C_3) so far as I have found. Syllable-medial vowels and syllable-final consonants in this language are phonetically bound so that it is impossible to divide them. Therefore it is very important to consider the distribution of their combinations.

The following table gives the occurrences of /-V (C_3)/ observed in the Alu dialect of Akha.

One of the elements mentioned above, /j/, is observed in only two cases, /mɛ-saj/ *'Maesai'* and /thàj/ *'Thai'*; however /mɛ̀-saŋ/ is also used side by side [with /mɛ-saj/]. /-aŋ/ has been recorded only in /mɛ̀-saŋ/ and /jì-haŋ/, *'Chiengrai'*; therefore it is possible to say that /-aj, -aŋ/ occur only in proper nouns, and it seems that their origin is not Akha. They are parenthesised in the following table.

-#	-m	-ŋ	-j
-i			
-e			
-ɛ			
-u	-um		
-o			
-ɔ		-ɔŋ	
-a		(-aŋ)	(-aj)
-ø			
-ɯ	-ɯm		
-ə			
-m̩			

Syllable-final consonants

As is clear from the table, the elements which occur as -(C_3) are /-m,-ŋ/ only.

The distribution of nasals is also quite limited. It will be treated later.

The following examples are of the syllable-final consonant contrasts:

/sú̀m/	*three*	/sɔ̀ŋ/	*nail*
/mɛ̀-saj/	*Maesai*	/jì-haŋ/	*Chiengrai*

1.6. *TONES*

These are elements which are shown as T in the formula in 1.2. The difference between T, and C or V is described in the following manner. The latter have a role in determining the temporal length of syllables; on the other hand, the former is connected with the whole of syllables and does not play a role in determining syllable length like C and V.

For example, /mɔ̀ŋ/ *'horse'*,

(C_1 = /m/, V = /ɔ/, C_3 = /ŋ/, T = /`/).

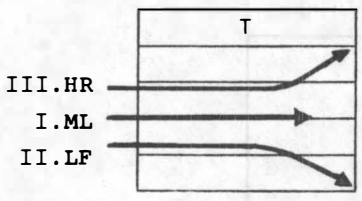
In this context, C precedes V, V precedes C_3, while T has a duration extending over the whole of the elements /mɔŋ/. In comparison with the contexts of the initial, medial and final positions of syllables C_1, V, C_3, T covers the whole of /C_1 V C_3/.

As the tonemes of Akha, three patterns are observed:

I. Mid level type (ML) no toneme symbol
II. Low falling type (LF) shown by `
III. High rising type (HR) shown by ´

In LF and HR, vowels are lengthened, and there is a tendency for the whole syllable to be lengthened, more than in ML.

The tones may be diagrammed as follows:



I.ML	/ba-la/	*'moon'*
II.HR	/lá-'ɯ́/	*'come'*
III.LF	/là/	*'interrogative'*

1.7. *LIMITATION OF DISTRIBUTIONS OF PHONEMES*

The syllables recorded in the Alu dialect are shown in the following table. Of course, since all of them are based on samples obtained from my field notes it is reasonable to assume that there are many other syllables in the Alu dialect.

In this table, only the combinations $C_1(C_2)$ and V(C_3) are shown;

tones are excluded. Therefore, there are in fact other possible shapes. For example, /'m̩/ can be in two forms: /'m̩/ *'do, make'* and /'m̩/ *'heaven, sky'*; however, in this table, only the form of /'m̩/ is shown and the tone marking is omitted.

Within the sphere of $\overbrace{C_1(C_2)\ V\ (C_3)}^{T}$ in 1.2. any type of syllables can exist in theory. Nevertheless, the actual combinations and distributions of each element are limited to some measure in practice.

$C_1(C_2)\ V\ (C_3)$

$C_1(C_2)$- \ -V(C_3)	-i	-e	-ɛ	-u	-o	-ɔ	-a	-ø	-ɯ	-ə	-m̩	-um	-ɯm	-ɔŋ	-aŋ	-aj
p-			o	o	o	o	o									
ph-	o		o	o	o	o	o	o	o	o				o		
b-	o		o	o	o	o	o	o	o	o				o		
m-	o	o	o	o		o	o		o	o				o		
pj-							o									
phj-				o		o	o									
bj-		o				o	o							o		
mj-		o			o	o	o							o		
t-	o		o		o	o	o			o						
th-	o		o	o	o	o	o	o						o		o
d-	o	o	o	o	o	o	o		o	o		o	o	o		
n-		o	o			o	o	o	o			o		o		
l-	o	o	o	o	o	o	o	o		o		o		o		
c-	o		o	o	o		o	o	o	o						
ch-	o	o	o	o	o	o	o	o		o						
ɟ-	o	o	o	o	o	o	o	o	o			o		o		
ɲ-	o		o	o	o	o	o	o				o				
j-			o	o	o	o	o	o	o	o		o		o		
k-	o				o	o	o									
kh-				o		o	o		o			o		o		
g-				o	o	o	o		o					o		
ŋ-		o	o				o	o								
x-			o		o	o	o	o				o		o		
ɣ-					o	o	o	o	o					o		
s-	o		o	o		o	o		o	o		o		o	o	o
h-			o	o	o	o	o	o	o		o			o	o	
'-	o		o	o	o	o	o	o	o		o			o		

As is obvious from the table and the comments above, the limitation of distributions of phonemes can be expressed by the following.

In the formula $\overbrace{C_1(C_2)\ V\ (C_3)}^{T}$:

(1) When -(C_2) is filled by /j/, C_1 must be one of the bilabial consonants /p, ph, b, m/. /mjɔ̀/ *'monkey'*.

(2) When -(C_2)- is filled by /j/, -V- is one of /u, o, ɔ, e, a/. /bjà/ *'honeybee'*, /a-bjɔ́ŋ/ *'colleague'*.

(3) When -V- is /m̩/, C_1 must be either of /', h/. /cà-hm̩/ *'hair'*, /'ḿ̩/ *'heaven, sky'*.

(4) When -V- is /m̩/, -(C_3) is never filled. /'m̩-'ẃ/ *'do, make'*, /'à-hm̩/ *'hair'*.

(5) When -(C_3) is filled by /m/, -V- must be either of /u,ɯ/. /súm/ *'three'*, /'m̩̂-dɯ́m-'ẃ/ *'cloudy'*.

(6) When -(C_3) is filled by /ŋ/, -V- must be either of /a,ɔ/. /gɔ̀ŋ/ *'spear'*, /ʃ̀ì-haŋ/ *'Chiengrai'*, /mɛ̀-saŋ/ *'Maesai'*.

(7) -(C_2)- must always be /j/. /mjɔ̀/ *'thing'*.

(8) -(C_3)- must always be one of /m, ŋ, j/. /súm/ *'three'*, /mɔ̀ŋ/ *'horse'*, /mɛ̀-saŋ/ *'Maesai'*.

(9) When -V- is /i/, C_1 is never filled by /n/. We find /ǹi/ *'two'*, but the form /ni/ is not observed. According to examples such as /ǹɛ-'ẃ/ *'catch'* and /nɛ̀/ *'spirit, soul'*, /ǹ/ and /n/ are not distributed contrastively, so these should be regarded as different phonemes.

1.8. *PHONETIC ANALYSIS OF EACH PHONEME*

In parts 1.1. to 1.7. I have described the distribution of each element in the structure of syllables. Here, I will discuss how these elements are realised in actual speech. That is to say, I have explained elements which construct syllables, in other word, phonemes, and here I treat states of the phonemes in terms of the phonemic system, i.e. each phoneme is named, its environment described (that is to say its position) and definitions of phonemes are provided. I will give examples lastly.

1.8.1. Bilabial consonants

(1) /p/: This is a voiceless unaspirated bilabial stop [p] in syllable-initial position. In the contexts /-jɔ, -ja/, this is palatalised [p^j]. /pà-jo/ *'tobacco'*, /pja-'ẃ/ *'scratch'*.

(2) /ph/: This is a bilabial stop [p'] which is voiceless and aspirated in syllable-initial position. In the contexts /-jɔ, -ja/, this is a palatalised [p'^{j}] which is always strongly aspirated. */phá-ɯ́/ 'to borrow money', /phjà-'ɯ́/ 'feverish'.*

(3) /b/: This is a bilabial stop [b] which is voiced and unaspirated in syllable-initial position. In the contexts /-jɔ, -ja/, this is a palatalised [b^{j}]. */bɔ́-'ɯ́/ 'suck', /bjɔ-'ɯ́/ 'feel enjoyable'.*

(4) /m/: This is a bilabial nasal [m] which is voiced and unaspirated in syllable-initial position. In cases of /-jɔ, -ja/, this is a palatalised [m^{j}] and in syllable-final position this is apt to be voiceless [m̥^{m}]; but at the same time, the closure is incomplete. */mɯ̀-'ɯ́/ 'good', /mjà-'ɯ́/ 'many', /júm/ 'house'.*

1.8.2. Dental consonants

(1) /t/: This occurs in syllable-initial position only. This is a stop [t] which is voiceless and unaspirated. */ta-'ɯ́/ 'salty'.*

(2) /th/: This occurs in syllable-initial position only. This is a stop [t'] which is voiceless and aspirated, and has strong aspiration. */thɘ̀-'ɯ́/ 'to indicate'.*

(3) /d/: This occurs in syllable-initial position only. This is a stop [d] which is voiced and unaspirated. */dɔ́-'ɯ́/ 'suck, drink'.*

(4) /n/ This occurs in syllable-initial position only. This is a nasal [n] which is voiced and unaspirated. */ná-'ɯ́/ 'feel a pain'.*

(5) /s/ This occurs in syllable-initial position only. This is a fricative [s] which is voiceless and unaspirated. In the contexts /-i, -ø/, this is palatalised [ɕ]. */sà-ʃí/ 'meat', /sí-'ɯ́/ 'to die'.*

(6) /l/: This occurs in syllable-initial position only. This is a lateral [l] which is voiced and unaspirated. In the contexts /-l, -ø/, this is palatalised to some extent. */lá-'ɯ́/ 'come', /'à-li/ 'boy'.*

1.8.3. Palatal consonants (hard palate)

(1) /c/: This occurs in syllable-initial position only. This is [an affricate] [č] which is voiceless and unaspirated. */cà-hm̥/ 'hair'.*

(2) /ch/: This occurs in syllable-initial position only. This is [an affricate] [č'] which is voiceless and aspirated; however the degree of the closure is more incomplete than in the case of /c/. */'ù-chɘ́/ 'head-dress'.*

(3) /ʃ/: This occurs in syllable-initial position only. This is

[an affricate] [ǰ] which is voiced and unaspirated. It has incomplete closure the same as in the case of /ch/. It could be said that /ch, ǰ/ are fricatives in terms of phonetics; however, considering relations expressed by /p, ph, b, m/ : /k, kh, g, ŋ/ : /c, -, -, ň/, it is reasonable to think that /ch, ǰ/ are the elements which can fill the positions of the dashes. /ǰà-'ẃ/ *'to eat'*.

(4) /ň/: This occurs in syllable-initial position only. This is nasal [ɲ]. /ňi/ *'two'*, /ňa-'ẃ/ *'wise'*.

(5) /j/: In syllable-final position, this becomes the semi-vowel [j] which is voiced and unaspirated, and in syllable-final position, this becomes [ĕ]. /jà/ *'child'*, /mè-saj/ *'Maesai'*.

1.8.4. Palatal consonants

(1) /k/: This occurs in syllable-initial position only. This is a stop [k] which is voiceless and unaspirated. /ka/ *'cross-bow'*.

(2) /kh/: This occurs in syllable-initial position only. This is a stop [k'] and always has strong aspiration. /kha-'ẃ/ *'drop off'*.

(3) /g/: This occurs in syllable-initial position only. This is a stop [g] which is voiced and unaspirated. /ga-ma/ *'road'*.

(4) /ŋ/: In syllable-initial position, this becomes nasal [ŋ]; in syllable-final position, it is so incompletely closed that it makes the preceding vowel nasalised. For example, /sɔ̀ŋ/ *'nail'* is pronounced like [sɔ̃:$^{ŋ}{}_{21}$]. /ŋà/ *'fish'*, /mɔ̀ŋ/ *'horse'*, /ǰì-haŋ/ *'Chiengrai'*.

(5) /x/: This occurs in syllable-initial position only. This is fricative [x] which is voiceless and unaspirated. /xà-là/ *'tiger'*, /ba-xo/ *'leather'*.

(6) /ɣ/: This occurs in syllable-initial position only. This is fricative [ɣ] which is voiced and unaspirated. /ɣà/ *'power'*, /ɣɸ̀/ *'nine'*.

1.8.5. Other consonants

(1) /'/: This occurs in syllable-initial position only. This is very much weaker than a glottal stop; therefore this should be called glottal tension. /'ɸ̀/ *'four'*.

(2) /h/: This occurs in syllable-initial position. This is glottal fricative [h] which is voiceless and unaspirated. /hẁ-'ẃ/ *'big, large'*.

1.8.6. Vowels

(1) /i/: This is an unrounded [i] which is high front. In the

context /x-/, this is apt to be voiceless. /'í-'ɯ́/ *'go (downward)'*.

(2) /e/: This is an unrounded [e] which is mid front. In the contexts /c-, ch-, ǰ-, ň-, j/, it is narrowed to some extent. /le-'ɯ́/ *'go upward'*, /che-xù̀m/ *'lamp'*.

(3) /ɛ/: This is an unrounded [ɛ] which is low front. /lɛ/ *'market'*, /ňɛ-'ɯ́/ *'catch'*.

(4) /ø/: This is a rounded [ø]. In the contexts /x-, ɣ-/, it becomes [oø]. /jə̀-chǿ/ *'sweet'*, /xø̀-'ɯ́/ *'steal'*, /ɣø̀/ *'nine'*.

(5) /u/: This is a rounded [u] which is high back. In the context /-m/, this becomes [ũ]. /phu/ *'village'*, /súm/ *'three'*.

(6) /o/: This is a rounded [o] which is mid back. /do-mi/ *'tail'*, /'ù̀-xo/ *'hat'*.

(7) /ɔ/: This is a rounded [ɔ] which is low back. In the context /-ŋ/, it is nasalised and becomes [ɔ̃]. The lips are incompletely rounded. /hɔ-'ɯ́/ *'see'*, /mɔ̀ŋ/ *'horse'*.

(8) /a/: This is an unrounded [a] which is low back. In the context /-ŋ/, it nasalised and becomes [ã]. /xà-là-na/ *'black panther'*, /mè-saŋ/ *'Maesai'*.

(9) /ɯ/: This is an unrounded [ɯ] which is high. In the context /-m/, it is nasalised and becomes [ɯ̃]. /jɔ-sɯ̀/ *'new'*, /dɯ̀m/ *'classifier, used for counting flat things'*.

(10) /ə/: This is an unrounded [ə] which is mid back. /sə̀/ *'teeth'*, /hɔ-jə́/ *'pile'*.

(11) /m̩/: In terms of phonetics, this should be classified as a consonant; however, considering its distribution in syllables in terms of phonemics, we can regard it as a vowel. To be precise, this /m̩/ always occurs in the environments ['m̩] or [m̥ m̩], and when ['] and [m̥] in the above mentioned forms are expressed as /'/ and /h/ it is possible to regard [m̩] as /m̩/, and when we analyse /'/ and /h/ as syllable-initial consonants, it is clear that /m̩/ is V, i.e. syllable-medial vowel. For example, the syllable /'m̩/ *'heaven, sky'* is analysed as follows: C_1 = /'/, V = /m̩/, T = /ˋ/. /cə̀-hm̩/ *'hair'*, /ju-'ḿ̩/ *'now'*.

1.8.7. Tones

(1) /no tonal sign/: Mid level tone [˧˧]. In the case of /C_1 (C_2)ɔŋ/, the vowel is slightly lengthened. But in other syllables, the vowel is not lengthened. /ba-la/ *'moon'*, /hɔŋ/ *'chest'*.

(2) /ˋ/: Low falling tone [˨˩]. In syllables with this tone, the

vowel is lengthened, and in syllables of the form /C_1 (C_2)ɔŋ/, the vowel is lengthened so much that the tone becomes almost like [˧˨˧]. /sə̀/ *'teeth'*, /mjə̀/ *'monkey'*, /gə̀ŋ/ *'spear'*.

(3) /ˊ/: High rising tone [˦˥]. The vowel is lengthened as in (2). In the syllable /C_1 (C_2)ɔŋ/, the vowel is remarkably lengthened. But in /C_1 (C_2)um/, the vowel is not lengthened. /jɔ-phŭ́/ *'blue'*, /jɔ-ɣɔ́ŋ/ *'hard'*, /jɔ-ňúm/ *'short'*.

2. THE ALU DIALECT AND THE SENCHAI DIALECT

2.1. Senchai village was selected as the main investigatory spot along with Alu village. The dialects spoken in these two villages only 10 kilometres apart have some differences. The following is a rough sketch of the differences between them.

I have already described the phonemes of the Alu dialect; therefore, I will refer only to the outline of the structure of syllables in the Senchai dialect. And then, I will point out some of the differences between them. This is not a report in which to make comparative studies of the languages. This paper only points out the differences between the two dialects.

The structure of syllables in the Senchai dialect can be described by the formula $Sy = \overbrace{C_1\ (C_2)\ V\ (C_3)}^{T}$ the same as the Alu dialect.

2.2. *PHONEMES OF THE SENCHAI DIALECT*

(1) In conformity with the formula, the phonemes are as in the following table.

			Labial	*Dental*	*Palatal*	*Velar*	*Etc.*
Stop	voiceless	unaspirated	p	t	c	k	
	"	aspirated	ph	th	ch	kh	
	voiced	unaspirated	b	d	ɟ	g	
Nasal	voiced	unaspirated	m	n	ň	ŋ	
Fricative	voiceless	unaspirated		s	ɕ	x	h
	voiced	unaspirated		z		ɣ	
Affricate	voiceless	unaspirated		ts			
	"	aspirated		tsh			
	voiced	unaspirated		dz			
Oral continuant	voiced	unaspirated		l			

/pj-, phj-, bj-, mj-/ are the possibilities for $C_1(C_2)$, the same as in the Alu dialect. Only /j/ can fill $-(C_2)$, and when $-(C_2)$ is filled, C_1 must be one of the bilabial consonants.

(2) V (syllable-medial vowel):

		High	*Mid*	*Low*	*Etc.*
Front vowel	unrounded	i	e	ɛ	
	rounded		ø		
Back vowel	unrounded	ɯ	ə	a	
	rounded	u	o	ɔ	
Special vowel					m̩

(3) $-(C_3)$ (syllable-final consonants): there are only /-j, -ŋ, -m/ in the Senchai dialect. When $-(C_3)$ is filled by /m/, -V- must always be either /u, ɯ/, and when $-(C_3)$ is filled by /ŋ/, -V- must always be either /a, ɔ/, and when /-j/ fills $-(C_3)$, -V- must always be /a/.

(4) T (tones): The Senchai dialect has the following three tones which are the same as in Alu.

I. Mid level type (ML) no tonal sign
II. Low falling type (LF) ˋ
III. High rising type (HR) ˊ

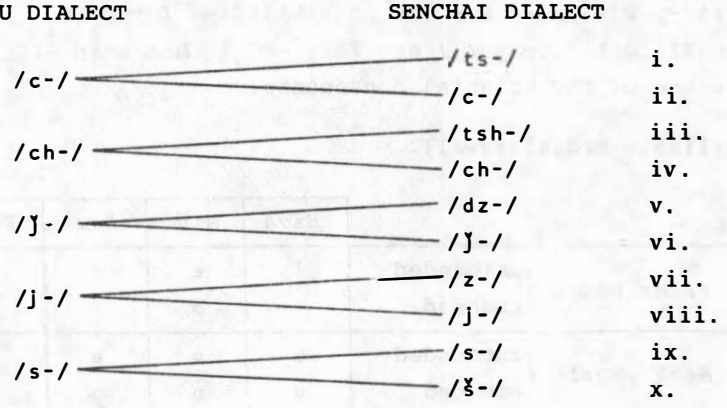
2.3. *THE DIFFERENCES BETWEEN THE ALU AND SENCHAI DIALECTS*

The two dialects are remarkably different in syllable-initial consonants. On the other hand, there are no conspicuous differences in syllable-medial vowels and syllable-final consonants. Hence I will refer only to the syllable-initial consonants which fill C_1-.

The Alu dialect has 23 consonants, and Senchai has 28, which include all the consonants of the Alu dialect. The other five consonants of the Senchai dialect are /ts, tsh, dz, z, š/, which are not observed in Alu.

In what way do these five consonants occur in the Alu dialect? The following table represents the differences in syllable-initial consonants of the two dialects. A large number of samples was obtained; this is a part of them.

(See table overleaf.)



i.	ALU /c-/:	SENCHAI /ts-/	
	/co-'ɯ́/	/tso-'ɯ́/	*build*
	/cé-'ɯ́/	/tsé-'ɯ́/	*go across*
	/cè-'ɯ́/	/tsè-'ɯ́/	*bark*
	/cù̀-jé/	/tsù̀-jé/	*friend*
	/cù̀-nɯ-xò/	/tsù̀-nɯ-xò/	*this year*
	/ǰa-cə/	/ǰa-tsə/	*sparrow*
	/mè-cɵ̀/	/mè-tsɵ̀/	*clothes*

ii.	ALU /c-/:	SENCHAI /c-/	
	/jo-cù/	/jo-cù/	*bud*
	/mɨ̀-ci/	/mɨ̀-ci/	*match*
	/ma-cà/	/ma-cà/	*bottle*
	/'ĩ-cù/	/'ĩ-cù/	*water*
	/cà-'ɯ́/	/cà-'ɯ́/	*cook*
	/cà-hm/	/cà-hm/	*hair*
	/cĩ-hà/	/cĩ-xà/	*deer*

iii.	ALU /ch-/:	SENCHAI /tsh-/	
	/dù-chĩ/	/dù-tshĩ/	*root*
	/chɔ-hà/	/tshɔ-xà/	*man*
	/jo-chɨ̀/	/jo-tshɨ̀/	*belt*
	/bɔ́-chɔŋ/	/bɔ́-tshɔŋ/	*forest*
	/lɛ̀-chɨ̀-'ɯ́/	/lɛ̀-tshɨ̀-'ɯ́/	*wash*
	/chɔ̀-ɣo/	/tshɔ̀-ɣo/	*fireplace*
	/chɔ̀-bɨ̀/	/tshɔ̀-bɨ̀/	*place to draw water*

iv.	ALU /ch-/:	SENCHAI /ch-/	
	/mi-ché/	/mi-ché/	*knife, sword*
	/'a-chɵ́/	/'a-chɵ́/	*milk, sweet*

iv. (continued)

/'ù-chǿ/	/'ù-chǿ/	*head-dress*
/chɛ́/	/chɛ́/	*rice*
/chá-chà/	/chá-chà/	*little finger*

v.

ALU /ʤ-/:	SENCHAI /dz-/	
/ʤɔ-'ɯ́/	/dzɔ-'ɯ́/	*to learn*
/hà-ʤɛ-'ɯ́/	/xà-dzɛ-'ɯ́/	*to expectorate*
/ʤù-'ɯ́/	/dzù-'ɯ́/	*bathing*
/ʤɯ́-'ɯ́/	/dzɯ́-'ɯ́/	*to buy*
/mɨ̀-ʤà/	/mɨ̀-dzà/	*fire*

vi.

ALU /ʤ-/:	SENCHAI /ʤ-/	
/'ù-ʤɛ̀-ʤɛ̀-'ɯ́/	/'ù-ʤɛ̀-ʤɛ̀-'ɯ́/	*the thunder rolls*
/ʤɔ́-'ɯ́/	/ʤɔ́-'ɯ́/	*stay*
/ʤa-lɛ́/	/ʤa-lɛ́/	*wind*
/ʤi-bà/	/ʤi-bà/	*wine*
/ʤa-cə/	/ʤa-tsə/	*sparrow*

vii.

ALU /j-/:	SENCHAI /z-/	
/'a-ja/	/'a-za/	*pig*
/jà/	/zà/	*child*
/hɔ-jə́/	/hɔ-zə́/	*pillar*
/jà-mi-jà/	/zà-mi-zà/	*woman, wife*
/hà-ʤɯ́-jà/	/xà-dzɯ́-zà/	*man, husband*

viii.

ALU /j-/:	SENCHAI /j-/	
/jɛ̀-'ɯ́/	/jɛ̀-'ɯ́/	*be drunk*
/jú-'ɯ́/	/jú-'ɯ́/	*take up*
/jù-'ɯ́/	/jù-'ɯ́/	*sleep*
/sà-jɵ̀/	/šà-jɵ̀/	*born*
/jò/	/jò/	*waist*
/ja-ma/	/ja-ma/	*elephant*

ix.

ALU /s-/:	SENCHAI /s-/	
/súm/	/súm/	*three*
/sà-phɨ́/	/sà-phɨ́/	*pepper*
/'a-sɨ̀/	/'a-sɨ̀/	*seed*
/sə̀/	/sə̀/	*teeth*
/sɔŋ/	/sɔŋ/	*nail*
/ma-sà/	/ma-sà/	*bamboo*

x.	**ALU /s-/:**	**SENCHAI /š-/**	
	/sà-ʃí/	/šà-ʃí/	*meat*
	/sí-'ɯ́/	/ší-'ɯ́/	*to die*
	/jɔ-sɯ́/	/jɔ-šɯ́/	*yellow*
	/jɔ-sɯ́/	/jɔ-šɯ̀/	*new*
	/súm/	/šúm/	*iron*
	/mi-sù/	/mi-šù/	*pine*

2.4. *OTHER POINTS OF DIFFERENCE*

The following were observed in addition to the samples mentioned above:

i.	**ALU /h-/:**	**SENCHAI /x-/**	
	/ho-cà/	/xo-cà/	*rat*
	/chɔ-hà/	/tshɔ-xà/	*people*
	/hà-ʃɯ́-jà/	/xà-dzɯ́-zà/	*man, husband*
	/hà-hḿ̩/	/zà-hḿ̩/	*bear*
	/hà-je-ʃɔ́/	/xà-je-ʃɔ́/	*parakeet*
ii.	**ALU /h-/:**	**SENCHAI /h-/**	
	/hɔ-'ɯ́/	/hɔ-'ɯ́/	*to see*
	/hɔ́/	/hɔ́/	*boiled rice*
	/jɔ-hɯ̀/	/jɔ-hɯ̀/	*big*
iii.	**ALU /'-/:**	**SENCHAI /ɣ-/**	
	/'ɔ́-pà/	/ɣɔ́-pà/	*vegetable (leaves)*
	/'ɔ́-ňɸ́/	/ɣɔ́-ňɸ́/	*vegetable*

All of these are samples of syllable-initial consonants only.

There is only one case of a difference in vowels between the two dialects, namely /sà-nɔ/ (Alu) : /sɛ̀-nɔ/ (Senchai) which means *'sandals'*.

Differences in syllable-final consonants and in tones were not observed.

CONCLUSION

I have described the system of phonemes; still, this report is only the first stage in the process of consolidating my field notes. I have treated phonemes in the context of syllables. Next I must consider the correlation of syllables, the structure of morphemes and sentences. I will report the results of each further stage in the future. Therefore, this report will become chapter one, paragraph one of the final report.

While I was analysing my data it was seen that the Akha language

corresponds with Burmese systematically, and that there are many differences with the Lahu and Lisu languages, though they look like very close languages. Of course, my work is not finished. I plan to go back to the village again before my final report is issued.

When the grammatical structure, glossaries and texts are analysed, the structure of the Akha language will be apparent. I think the comparative study of Akha with closely related languages must wait until after that time, and complete analyses of Lahu, Lisu and Bisu will be needed at that time, too.

Translation edited by David W. Dellinger. Translation provided by the Translation Service of the Australian National University.

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A PRELIMINARY STUDY OF THE BISU LANGUAGE - A LANGUAGE OF NORTHERN THAILAND, RECENTLY DISCOVERED BY US

TATSUO NISHIDA

From September 1964 to February 1965, I investigated several languages belonging to the Burmese-Lolo group in Chiang Rai Province and Tak Province, Northern Thailand.[1]

Some languages of this group are found in this region, especially in the mountainous area, along with various dialects of the Thai language.[2] Therefore, the region was very important for our investigations.

In Chiang Rai and Tak Province, the languages of Akha, Lahu Shi, Lahu Na, Lahu Ni and Lisu are spoken in many villages, and there are some variants of the same language from one village to another. These languages are considerably different, of course, from those of the tribes of Lahu, Lisu and Akha in the Shan States and Kachin States in Burma, and also quite different from the languages of the same tribes scattered in Yünnan Province in China.

During the investigation, I was able to study the languages of Akha, Lahu Na, Lahu Shi and Lisu out of the group mentioned above. It was in the last stage of the investigation that I encountered the Bisu language, which is the subject of this paper.[3]

DISTRIBUTION OF BISU LANGUAGE

1. To the best of my knowledge, the existence of the Bisu tribe and Bisu language has never been reported. At least, so far as the name is concerned, it would not be an error to say that the language and tribe are new discoveries. Naming the language as the Bisu language and the tribe as the Bisu tribe, must be proper, too, because that is the way they call themselves.

Nishida, T. "A Preliminary Study of the Bisu Language - a Language of Northern Thailand, Recently Discovered By Us". In Dellinger, D., Hope, E., Katsura, M. and Nishida, T. editors, *Papers in Southeast Asian Linguistics No. 3*. **A-30:55-86**. Pacific Linguistics, The Australian National University, 1973. DOI:*10.15144/PL-A30.55*

The Bisu language, which I am going to take up in this paper, is spoken at Ban Lua village, situated 10 kilometres west of Ban Huai San, which lies 23 kilometres south of Chiang Rai City in Chiang Rai Province. I shall call it the Ban Lua Bisu language of Ban Huai San, and for short, the Ban Lua Bisu language.

According to a report from Mr Mitani,[4] a similar language, though it is almost dead as a spoken language, is remembered by old villagers at Ban Tha Ko, situated 45 kilometres southwest of Ban Huai San. I shall call this the Bisu language of Ban Tha Ko.

There was some information on some forms of the same language being spoken in another place, but it has not been verified yet. It is quite possible that the Bisu language is still spoken in some other villages in Thailand, but this must be left to further investigation.

The Bisu tribe is called the "Lawa tribe" (Lua in the Thai language) by neighbouring Thai tribes, but the reason for it is not clear. It is, I assume, probably because the Bisu tribe was originally of the Lawa tribe and through the process of time came to speak a Burmese-Lolo language, or probably because they were originally a Burmese-Lolo tribe and yet came to identify themselves as the Lawa tribe for one reason or another. There is no basis for making a conclusion. Of the Lawa tribe itself, for that matter, no details have been discovered yet. What is almost certain about the tribe is that they used to be an influential group of people in some parts of Thailand and Burma. It is conceivable that some of the people, called the Lawa tribe in Thailand, still speak a language of the Burmese-Lolo group.

2. It is certain that the Ban Lua Bisu language has never been reported before, but languages similar to it have been reported as the language group of the Lawa in Thailand,[5] under the name of the Phunoi language in Laos,[6] and the Pyen or Pyin language in Kengtung, Shan State, in Burma.[7]

The Phunoi and Pyen languages are the closest to the Bisu language; however, the available data for these languages are so poor that it will hardly make any sense if one tries to compare them with the Bisu language.

But the Bisu, the Pyen and Phunoi languages are undoubtedly closely related sister languages, and as a group they are in an intermediate position between the Burmese language and the Akha language. Therefore, I may be right to treat the Bisu language as a representative language of this new group which is composed of the Bisu, Pyen and Phunoi languages. The subject of the system of the Bisu shall be dealt with in another paper.[8]

3. The following account is based on the data obtained from an informant, Mr X, who lived in Ban Lua in February 1965. No details of his personal history are available, but he has not been outside Ban Lua and Chiang Rai City. He understood and spoke the Northern Thai language as well as the Bisu language, and was a good informant.

The investigation was made through the Thai language. The Bisu tribe has many contacts with the Thai people, but surprisingly the informant scarcely replaced Bisu words with Thai words from my questions.

This paper is intended as a preliminary study of the Bisu language. The final report will be published with the studies of the languages of Akha, Lahu and Lisu, by the Center for Southeast Asian Studies, Kyoto University, by the end of 1968.

PHONEMIC SYSTEM OF BAN LUA BISU LANGUAGE

The following is a rough sketch of the phonemic system of Ban Lua Bisu. A morpheme of Ban Lua Bisu in most cases is a single monosyllable, and monosyllables have either CV# or CVC forms (C stands for consonant and V for vowel) accompanied by a toneme.

4. *TONEME*

The tonemes of Bisu are in a register tone system, based on high, mid and low level type tones. The basic identity of these can be seen from the following examples.

[hja:$_{55}$]	*rice field*	[ʔa̰ŋ$_{33}$ ʔṵ:$_{55}$]	*gut*
[hja̰·$_{33}$]	*fowl*	[hja:$_{33}$ ʔṵ·$_{33}$]	*egg*
[hja:$_{11}$ ŋɛ͡i$_{11}$]	*to itch*	[ʔu:$_{22}$ hlɔŋ$_{21}$]	*pot*

From this data, we can recognise the existence in Bisu of three tonemes based on the opposition of high-level $_{55}$, mid-level $_{33}$, and low-level $_{11}$, which are given the following signs:

1) high level tone: á; 2) mid level tone: a; 3) low level tone à.

Tonemes of the form shown in the example above are inscribed as in: hjá: hja: hjà, ú; u: ù.

In a syllable with mid level tone, the vowel has the distinctive feature of being sounded with laryngal tension (laryngal-tensed vowels are written as a̰, ṵ, ḛ). The same phenomenon is observed in the falling tone of Burmese in which the vowel has laryngal tenseness. These three kinds of tone occur in the syllable form CVC (nasal), in addition to CV#. In syllables of the CVC (stop) type, only high and low level tones are found; the mid level tone is missing.

In syllables of the CVC (stop) type, a high level type tone is

uttered slightly lower [˧˦]~[˧˧], and is distinguished from mid level by the laryngal tenseness of vowels.

[bi₁₁ khit⁷˧˦]	*'match'*	[ha₃₃ mit⁷˧˥]	*'bamboo sprout'*
[tu₂₂ kap⁷˧˦]	*'a cover'*	[tɔk⁷₁˥ tɔ:₂₁]	*'house lizard'*
[ʔa̰ŋ₃₃ jit⁷˧˦]	*'few'*		

Syllables of CVC (stop) type are chiefly found in words borrowed from the Thai language. The low level tone [₁₁] sometimes is freely replaced by the falling tone [₂₁] in Bisu, for example, [lan₁₁] does not contrast with [lan₂₁] *'earring'*, and [muŋ₁₁] does not contrast with [muŋ₂₁] *'sky'*.

This falling tone appears in a syllable preceding pause; and a syllable affixed with the morpheme -ŋɛ takes the falling tone in many cases.

[ʔa̰ŋ kɛŋ₂₁]	*'hard'*	[kɛŋ₂₁ ŋɛ₁˥]	*'to be hard'*
[ʔa̰ŋ vɣ:₂₁]	*'far'*	[vɣ:₂₁ ŋɛ₁˥]	*'to be far'*
[ʔa̰ŋ ⁿ̊dw:₂₁]	*'near'*	[ⁿ̊dw:₂₁ ŋɛ₁˥]	*'to be near'*

These words are not pronounced [kɛŋ₁₁ ŋɛ] [vɣ:₁₁ ŋɛ] [ⁿ̊dw:₁₁ ŋɛ], but always in the falling tone. However, since in addition to the fact that [₁₁] is freely replaced by [₂₁], [₁₁. ₁˥] and [₂₁. ₁˥] do not appear as contrastive continuant morphemes. The falling tone may be regarded as a variation of the low level tone.

Besides three basic tones, i.e. high, mid, low level tones, a rising tone is observed in Bisu as gliding sounds, and in numerals and in the twelve zodiacal signs, borrowed from Thai.

1) [na:₁₁ swŋ₁₅ hən₅₅] *'hole of the ear'* is an example of the gliding tone. Comparing this rising tone with [na:₁₁ swŋ₁₁] *'ear'*, we can see that it is a variation of the low level tone which appeared next to the high level tone [₁₁. ₁₁] → [₁₁. ₁₅. ₅₅].

2) Such numerals as [sam₃₅] *'three'*, [sɔŋ₃₅] *'two'* and such zodiacal signs as [si₃₅] *'dragon (cycle of year)'*, [sa·n₃₅] *'monkey (cycle of year)'* are examples of borrowed words with rising tones. Since they do not especially contrast with the high level tone [₅₅], we can regard them as a variation of the high level tone.

Usual pronunciation and careful pronunciation

Subordinate morphemes following another syllable have a specific tone when they are pronounced carefully, but in normal pronunciation, so-called weak utterances are observed. For example, *'boiled rice'* is [haŋ₁₁ tsa:₅₅] in careful pronunciation, but usually it is uttered [haŋ₁₁ tsa₅]; *'to be salty'* is uttered [jaŋ₅₅ ts'a:₅₅] in careful pronunciation, but usually is [jaŋ₅₅ ts'a₅]; and *'heard'* is uttered

[ʔa̰ŋ₃₃ tu:₂₁], but usually is [ʔa̰ŋ₃₃ tu·₂₁].

Modulation phenomena of Bisu

This sort of variation of tones is most apparent when the main syllable is followed by a bound morpheme, especially /-ŋɛ́/.

	careful pronunciation	usual pronunciation	
CV́#-ŋɛ́	[ju:₅₅ ŋɛ:₅₅]	[ju:₅₅-ŋɛ₅]	*'to take'*
CV́C(stop)-ŋɛ́	[ʔ̊dep⁴₄-ŋ₅₅-ŋɛ:₅₅]	[ʔ̊dep⁴₄-ŋ₅-ŋɛ₅]	*'to count'*
CV#-ŋɛ́	[ga̰·₃₃-ŋɛ:₅₅]	[ga̰·₃₃-ŋɛ₃]	*'to get'*
CV̀#-ŋɛ́	[jɛ:₁₁-ŋɛ:₅₅]	[jɛ:₁₁-ŋɛ₁]	*'to cut'*
CV̀#-ŋɛ́	[ju:₂₁-ŋɛ:₅₅]	[ju:₂₁-ŋɛ₁]	*'to sleep'*
CV̀C(stop)-ŋɛ́	[kʰit˥₁₁-ŋ₅₅-ŋɛ:₅₅]	[kʰit˥₁₁-ŋ₁-ŋɛ₁]	*'to draw a line'*

In the case of longer utterances, e.g. main syllable + secondary syllable (/lá, lɛ́, lɯ́, khá/ etc.) + the bound morpheme /ŋɛ́/, the following modulate phenomena are observed.

[ʔɔ̰ŋ₅₅ la:₅₅ ŋɛ:₅₅] → [ʔɔ̰ŋ₅₅ la:₄₄ ŋɛ:⁀₃₃] *'to enter'*
[haŋ₅₅ la:₅₅ ŋɛ:₅₅] → [haŋ₅₅ la:₄₄ ŋɛ:⁀₃₃] *'to bring'*
[vḭ·₃₃ lɯ:₅₅ ŋɛ:₅₅] → [vḭ·₃₃ lɯ:₃₃ ŋɛ:⁀₃₃] *'to abandon'*
[tʰa̰·₃₃ la:₅₅ ŋɛ:₅₅] → [tʰa̰·₃₃ laŋ₃₃ ŋɛ:⁀₃₃] *'to rise up'*
[ʔ̊dṵŋ₁₁ la:₅₅ ŋɛ:₅₅] → [ʔ̊dṵŋ₂₂ la:₂₂ ŋɛ:⁀₂₂] *'to wake up'*
[ɬɯ:₁₁ ʔɛ:₅₅ ŋɛ:₅₅] → [ɬɯ:₂₂ ʔɛ:₂₂ ŋɛ:⁀₂₂] *'to convey'*

When a main syllable is followed by another main syllable, similar modulate phenomena occur as an influence of the tone of the following morpheme.

1) high level [₅₅] + high level [₅₅] change to [₄₄. ₅₅]
   'leg' [pɔŋ₅₅ tu:₅₅] → [pɔŋ₄₄ tu:₅₅]
   'nickel' [pʰlu:₅₅ tɔŋ₅₅] → [pʰlu:₄₄ tɔŋ₅₅]

2) mid level [₃₃] + low level [₂₁] change to [₂₂. ₃₃]
   'granary' [kɔ̰₃₃ tsʰɔŋ₂₁] → [kɔ̰₂₂ tsʰɔŋ₃₃]

3) low level [₁₁] + high level [₅₅] change to [₂₂. ₅₃]
   'saliva' [kʰan₁₁ laŋ₅₅] → [kʰan₂₂ laŋ₅₃]
   'horse saddle' [ʔa₁₁ mɔŋ₁₁ taŋ₅₅] → [ʔa₁₁ mɔŋ₂₂ taŋ₅₃]

4) low level [₁₁] + mid level [₃₃] change to [₂₂. ₃₃]-[₂₂. ₁₁]
   'eye' [mɛ:₁₁ hnɯ̰·₃₃] → [mɛ:₂₂ hnɯ̰·₃₃]
   'grave' [kam₁₁ tṵ·₃₃] → [kam:₂₂ tṵ·₃₃]

5) low level [$_{11}$] + low level [$_{11}$]-[$_{21}$] change to [$_{22}$. $_{21}$]

'garlic' [la:$_{11}$ phi:$_{21}$] → [la:$_{22}$ phi:$_{21}$]

'tongue' [mɛn$_{11}$ hla:$_{11}$] → [mɛn$_{22}$ hla:$_{11}$]

5. *CONSONANTS*

The inventory of the consonantal phonemes of Bisu comprises thirty-one kinds of segmental phonemes and nine kinds of consonantal combinations.

The segmental phonemes can be grouped in the following way.

	stops	*affricates*	*fricatives*	*nasals*	*laterals*
velar	k kh g ?		h	ŋ hŋ	
bilabial	p ph b		f w	m hm	
dental	t th d	ts tsh	s	n hn	l hl
		tš tšh	š j hj	ň hň	

The consonantal phonemic system, which is composed of the segments listed in the table, has one prominent feature. The contrast voiceless: voiced occurs under "stop" and "nasal" for the velar, bilabial and dental positions.

But for dental affricates, there is no dz contrasting with /ts tsh/, or dž contrasting with /tš tšh/, or zž in contrast with /s š/.

On the other hand, /hl/ contrasts with /l/, /hj/ with /j/, and /f/ with /w/. Therefore, the main features of the consonantal system in Bisu are three principal contrasts - stop: nasal: affricate: fricative: lateral; unaspirated: aspirated, and voiceless: voiced. These contrasts occur mostly in the position C- of the syllable CVC; and in the position of final -C only the contrast of stop: nasal: fricative (friction does not occur, in practice), that is to say, only the contrast /-k, -t, -p/ : /-ŋ, -n, -m/ : /-j, -w/ is functional.

Now about the character of sound for each phoneme.

1) **Voiceless unaspirated stop /k/ /t/ /p/**

/k/ /t/ /p/ are uttered [k] [t] [p], with complete stop and explosion, when they are in the initial position of syllables, but they are uttered [k˺] [t˺] [p˺], with complete stop, but without explosion, in the final position of syllables.

[ku:$_{11}$ ŋɛ$_{55}$] *'to sew'* [nɐ$_{33}$ ʔɣ·k˺$_{44}$] *'breast'*

[tɔ:$_{55}$ lɔ̰·$_{33}$] *'butterfly'* [lɔŋ$_{11}$ pɛ·t˺$_{44}$] *'breast of woman'*

[pa:$_{11}$ pa:$_{33}$] *'cheek'* [khɛ·p˺$_{44}$] *'shoe'*

A voiceless unaspirated stop also occurs in the glottis. /ʔ/ has

only weak explosion, and this is observed distinctly when the syllable is uttered with a tense vowel on the mid level tone. In a syllable which has a tone other than the mid level tone, the vowel is apt to be uttered tensely when /ʔ/ is in the initial position of that syllable.

[ʔa̰ŋ₃₃ tu:₂₁] *'head'* [ʔṵŋ₅₅ ŋɛ:₅₅] *'to cry'*
[ʔṳ:₅₅ ŋɛ:₅₅] *'to laugh'* [ʔɛ̰ŋ₁₁] *'excrement'*

2) **Voiceless aspirated stop /kh/ /th/ /ph/**

/kh/ /th/ /ph/ are uttered [kʰ] [tʰ] [pʰ], with complete stop, but not so strong explosion. These phonemes do not occur in the final position of syllables.

[kʰwŋ₅₅] *'thread'* [tʰɛ̰ŋ₃₃] *'that'*
[pʰa:₃₃ tɕaŭ₅₅] *'Buddha'*

3) **Voiced unaspirated stop /g/ /d/ /b/**

/g/ /d/ /b/ are uttered in two ways, that is, [g] [d] [b] with complete stop and explosion, and [ᵝ̊g] [ⁿ̊d] [ᵐ̊b] with weak, voiceless and non-nasal glide. When they are attached to another syllable, or follow pause, [g] [d] [b] are observed if they are uttered carefully.

[ga̰·₃₃]~[ᵝ̊ga̰·₃₃] *'I'* [ʔa̰ŋ gaŭ₂₁] *'bone'*
[dwŋ₅₅ ŋɛ·₅₅]~[ⁿ̊dwŋ₅₅ ŋɛ:₅₅] *'to sit'* [bi:₁₁ su:₁₁]~[ᵐ̊bi:₁₁ su:₁₁] *'Biɛu'*
[laŋ₅₅ bɛ:₂₁ ŋɛ₁₁] *'to be thirsty'*

Therefore, [g] : [ᵑ°g], [d] : [ⁿ°d], [b] : [ᵐ°b] are regarded as freely varying phones without contrast of features.

4) **Voiceless fricative /ts, tsh, tš, tšh/**

The palatal alveolars [ts] [tsʰ], and [tɕ] [tɕʰ], which are articulated in the alveolar-palatal region, are observed in the following examples.

[tsɔ:₁₁ mɛ:₂₁] *'salt'* [ʔa̰ŋ₃₃ tɕɔ:₂₁] *'waist'*
[tsʰaŭ₁₁ ŋɛ:₅₅] *'to cough'* [ʔa̰ŋ₃₃ tɕʰaŭ₅₅] *'sweet'*

For the former, we write the phonemes /ts/ /tsh/, and for the latter, /tš/ /tšh/. The contrast of these two lines is obvious; however, among these, [tɕ-] turns freely into [kj-].

[tɕu:₁₁ ŋɛ₅₅]~[kju:₁₁ ŋɛ₅₅] *'to suck'* [tɕi:₁₁ ŋɛ₅₅]~[kji:₁₁ ŋɛ₅₅] *'to speak'*
[ʔa̰ŋ₃₃ tɕɔ:₂₁]~[ʔa̰ŋ₃₃ kjɔ:₂₁] *'waist'*

The informant preferred [kj-] to [tɕ]. In some morphemes, only [kj-] occurs and [tɕ-] does not occur; for example, [kja:₁₁ -ŋɛ₅₅] *'to hear'*. Conversely, in some other morphemes, only [tɕ-] occurs, for example,

[tɕ an$_{33}$ bɛn$_{33}$] *'dish'*. Therefore [tɕ] and [kj] do not always freely replace each other. Besides, the aspirated sounds [tɕʰ] and [kʰj] which correspond to [tɕ] and [kj], clearly contrast with each other. Thus, for the former [kj] I will claim the consonantal phonemic cluster /kj/, which shall be described later on, and regard it as a unit in contrast with the phoneme /tš/.

/tš/		/kj-/	/tšh-/	/khj-/
[tɕ] (in some cases freely replaced by [kj])				
		[kj]	[tɕʰ]	[kʰj]

5) **Fricative /s/ /š/ /h/ /j/ /hj/ /f/ /w/**

In the line of fricatives, we observe the following:

i) voiceless [s] which is articulated as palatal alveolar; ii) alveo-palatal voiceless [ɕ]; iii) glottal voiceless [h]; iv) weak voiced on-glide [j] and voiceless on-glide [j̊j]; v) labiodental voiceless [f] and voiced [v]; vi) bilabial [w].

I shall posit the phonemes which correspond to them as follows:

[s]	[ɕ]	[h]	[j]	[j̊j]	[f]	[v]	[w]
/s/	/š/	/h/	/j/	/hj/	/f/	/w/	

[sɔ:$_{11}$ pʰjɛ:$_{21}$]	*'tooth'*	[sa:$_{11}$ tu̯·$_{33}$]	*'priest'*
[ɕa:$_{55}$ ŋɛ:$_{55}$]	*'to seek'*	[ʔaŋ$_{33}$ ɕum$_{55}$]	*'shade'*
[ha̯·$_{33}$ ja:$_{21}$]	*'bird'*	[haŋ$_{55}$ man$_{55}$]	*'wind'*
[j̊ja̯·$_{33}$]	*'hen'*	[j̊jaŋ$_{55}$ ba̯·$_{33}$]	*'elephant'*
[kau̯$_{55}$ fei̯:$_{55}$]	*'coffee'*	[mai̯$_{21}$ si:$_{33}$ fan$_{21}$]	*'toothbrush'*

This [f] occurs only in words borrowed from Thai. I have recorded only the two words mentioned above.

[wa:$_{21}$]	*'pig'*	[ʔɔ:$_{11}$ wam$_{55}$]	*'bear'*
[vɣ̯:$_{33}$]	*'chisel'*	[ʔaŋ$_{33}$ vɛ̯·$_{33}$]	*'flower'*
[vɯ̯:$_{55}$ ŋɛ:$_{33}$]	*'to buy'*	[vi̯·$_{33}$ lɯ·$_{33}$ ŋɛ:$_{33}$]	*'to abandon'*

The distribution of the [w] and [v] shows that they complement each other. [w] occurs in front of [a]; [v] occurs before all other vowels. For this distribution, I use the phoneme /w/. However, in case of words which are clearly recognised as borrowed from Thai, [w] also occurs in words like [pjaŋ$_{55}$ wi:$_{33}$] *'fan'*, [wɛn$_{33}$] *'mirror'*.

6) **Nasal /ŋ/ /m/ /n/ /ň/: /hŋ/ /hm/ /hn/ /hň/**

In this group, besides [ŋ], [m], [n], and [ŋ͡m], there are [$^{n̊}$ŋ] [$^{m̊}$m] [$^{n̊}$n] [$^{n̊}$ŋ͡m], which have voiceless on-glides. I write /ŋ/ /m/ /n/ /ň/ for the former, and /hŋ/ /hm/ /hn/ /hň/ for the latter. There are examples following for these contrasts.

/ŋ/	[ŋɔ̌$_{21}$ ŋɛ:$_{11}$]	*'to be bent'*	/hŋ/	[^{ɦ}ŋeǐ$_{21}$]	*'leech'*
/m/	[muŋ$_{21}$]	*'sky'*	/hm/	[$^{m̥}$muŋ$_{55}$]	*'mushroom'*
/n/	[na:$_{11}$ swŋ$_{11}$]	*'ear'*	/hn/	[$^{n̥}$na:$_{55}$ khaŋ$_{55}$]	*'nose'*
/ň/	[ɲɔ̌m$_{11}$ ŋɛ:$_{11}$]	*'to dye'*	/hň/	[ʔaŋ$_{33}$ $^{ɲ̥}$ɲum$_{55}$]	*'short'*

7) **Lateral /l/ /hl/**

We find a voiced alveolar lateral [l] and voiceless on-glide [l̥].

[lum$_{55}$ ŋɛ:$_{55}$]	*'to be warm'*	[l̥lum$_{55}$ ŋɛ:$_{55}$]	*'to warm'*
[lan$_{55}$]	*'axe'*	[ʔaŋ$_{33}$ l̥lan$_{55}$]	*'grandson'*

This contrast of two phonemes is expressed as /l/ : /hl/.

8) **Combinations of phonemes**

The only combinations of phonemes observed in Bisu are [pj] [p^{h}j] [bj] [$^{m̥}$mj] [kj] [k^{h}j], combinations with non-fricative glide [j], and [pl] [p^{h}l] [bl] [kl] [k^{h}l], combinations with voiced lateral [l]; there are no other combinations. Nucleus consonants are limited to bilabials and palatals. In combinations with [j], the nucleus stop and nasal are palatalised. [l] combined with a stop is usually shortened and is apt to become voiceless. [kl] → [kl̥] [k^{h}l] → [k^{h}l̥] [bl] → [bl̥].

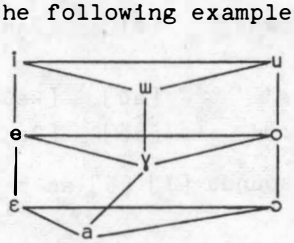
[pja:$_{21}$]	*'bee'*	[pl̥um$_{11}$]	*'taro'*
[sɔ:$_{11}$ p^{h}jɛ:$_{21}$]	*'tooth'*	[p^{h}l̥a:$_{33}$]	*'priest'*
[ʔaŋ$_{33}$ bja:$_{21}$]	*'many'*	[bla:$_{11}$]	*'arrow'*
[$^{m̥}$mja·$_{33}$ t^{h}aŋ$_{55}$]	*'knife'*		
[kjaŭ$_{11}$ ŋɛ:$_{55}$]	*'to wash (cloth,hair)'*	[ʔaŋ$_{33}$ kl̥am$_{11}$]	*'slow'*
[ʔaŋ$_{33}$ k^{h}jaŭ$_{55}$]	*'horn'*	[ʔaŋ$_{33}$ k^{h}l̥aŭ$_{55}$]	*'inside'*

Herewith, I give the following combinations of phonemes:

/pj, phj, bj, hmj: kj, khj/ /pl, phl, bl: kl, khl/, but /phj/ is very rare.

6. *VOWELS*

The inventory of vowels of Bisu shows a well regulated nine vowel system which is composed of four front tense unrounded vowels /i e ɛ a/, three back rounded vowels /u o ɔ/ and two back tense vowels /ɯ ɣ/. There are contrasts of [i] [u] [ɯ] [eǐ] [ŭo] [ɣ] [ɛ] [ɔ] [a] in Bisu, which can be observed in the following examples.



[pi:$_{11}$ ŋɛ:$_{11}$]	*'to give'*	[nɐ$_{33}$ li:$_{55}$ ka:$_{11}$]	*'clock'*	/ɪ/
[peɪ̯:$_{11}$ ŋɛ:$_{11}$]	*'to show'*	[leɪ̯$_{11}$ ja:$_{21}$]	*'ogre'*	/e/
[pɛ:$_{11}$ kʰa:$_{21}$]	*'kidney'*	[lɛ:$_{55}$ ŋɛ:$_{55}$]	*'to go'*	/ɛ/
[pa:$_{11}$ pa̰·$_{33}$]	*'cheek'*	[la:$_{55}$ ŋɛ:$_{55}$]	*'to come'*	/a/
[pɯ:$_{55}$ la̰:$_{55}$ ŋɛ:$_{55}$]	*'to think'*	[lɯ:$_{55}$ ŋɛ:$_{55}$]	*'to come'*	/ɯ/
[pɣ̰·$_{33}$ ŋɛ:$_{55}$]	*'to shoot'*	[lɣ:$_{33}$]	*'saw'*	/ɣ/
[la:$_{11}$ pu:$_{21}$]	*'hand'*	[phlu:$_{55}$]	*'money'*	/u/
[nɐm$_{33}$ pŭo$_{33}$]	*'bucket'*	[lŭo$_{33}$]	*'shovel'*	/o/
[pɔ:$_{11}$ ŋɛ:$_{11}$]	*'to cure'*	[lɔ:$_{55}$]	*'wheel'*	/ɔ/

In open syllables with mid level tone, when initial in the utterance, and in such limited environments as preceding [p] or [m], [ɐ] occurs.

[nɐ·$_{33}$ ɾɣ·$_{33}$]	*'tomorrow'*	[tu:$_{11}$kep$^{\lceil}$a̰$_{4}$]	*'a cover'*
[tɐ·$_{33}$ sɛ:$_{55}$]	*'mountain'*	[tʰɐm$_{33}$]	*'cavern'*
[kɐ·$_{33}$ kju:$_{21}$]	*'valley'*		

This [ɐ] can be regarded in this environment as a variation of [a]. Therefore, I deduce nine phonemes /ɪ, e, ɛ, a, ɯ, ɣ, u, o, ɔ/ for these vowels. The phonemes /e/ and /o/ also occur in the form [-eɪ̯n], [-ŭon] in in CVC syllables.

[hɔŋ$_{33}$ tɾŭon$_{55}$]	*'fox'*	[kʰjeɪ̯n$_{55}$ ŋɛ $_{55}$]	*'to be sour'*
[ʔaŋ$_{33}$ pŭon$_{21}$]	*'white'*	[ʔa̰ŋ$_{33}$ seɪ̯ŋ$_{55}$]	*'voice'*

On the whole, the functional contrast of long vowels and short vowels is not observed. But vowels have a tendency to be lengthened in syllables which finish with unreleased [-p$^{\lceil}$] [-t$^{\lceil}$] [-k$^{\lceil}$]. On the other hand, vowels of syllables which end with nasals, are tense and shorter than in the former form.

When syllables which are open are uttered with high or low tone, a long vowel occurs, but when they are uttered with mid tone, the vowel is tense and shortened.

[la:$_{55}$ ŋɛ:$_{55}$]	*'to come'*	CV# (high level)
[lɛ·$_{33}$ tɯ:$_{21}$]	*'rope'*	CV# (mid level)
[laŋ$_{55}$]	*'water'*	CVC (nasal)
[kɐ·$_{33}$ la·t$^{\lceil}$$_{44}$]	*'paper'*	CVC (stop)

The ascending diphthong vowels in Bisu are observed in the following examples.

[aɪ̯]	[ɾaɪ̯$_{11}$ ŋɛ:$_{11}$]	*'to bend'*	[ɔɪ̯]	[ʔa̰ŋ ŋɔɪ̯$_{21}$]	*'curved'*
[ɣɪ̯]	[mɣɪ̯$_{55}$]	*'fog'*			
[aŭ]	[ʔa̰ŋ$_{33}$ gaŭ$_{21}$]	*'bone'*	[eŭ]	[keŭ$_{33}$]	*'glass'*
[ɛŭ]	[ʔa̰ŋ$_{33}$ tʰɛŭ$_{21}$]	*'a row'*	[ɔŭ]	[ʔa̰ŋ kʰjɔŭ$_{33}$]	*'green'*

If we regard auxiliary sounds [ɪ̯] [ŭ] as the equivalent units of

consonantal phonemes /j/ /w/ which occur in the final position of syllables, it is possible to posit the continuants /aj/ /ŋj/ /ɣj/ /aw/ /ew/ /ɛw/ /ɔw/. But these diphthong vowels do not have identical distribution with the initial sounds of syllables, and are limited in such a way that [eu] comes only after [k] and [ɛu] comes only after [tʰ]; therefore, I will unite them as /ɛw/, rather than deal with them as contrastive units of /ew/ /ɛw/.

The words in which such units occur are mostly words borrowed from Thai. According to my data, the distributional relations between vowel phonemes and final consonants in Bisu are as follows:

	-ŋ	-m	-n	-k	-p	-t	-j	-w
a	aŋ	am	an	ak	ap	at	aj	aw
i	iŋ	×	in	ik	×	it	×	×
e	eŋ	em	en	ek	×	et	×	×
ɛ	ɛŋ	ɛm	ɛn	×	ɛp	ɛt	×	ɛw
ɯ	ɯŋ	×	ɯn	×	×	ɯt	×	×
ɣ	ɣŋ	ɣm	ɣn	ɣk	ɣp	ɣt	ɣj	×
u	uŋ	um	un	uk	up	ut	×	×
o	oŋ	×	on	ok	op	ot	×	×
ɔ	ɔŋ	ɔm	ɔn	ɔk	×	ɔt	ɔj	ɔw

7. *JUNCTURE PHONEME /ŋ/*

When the nucleus morpheme is in close juncture relation with the auxiliary morpheme -/ŋɛ/, the juncture morpheme /ŋ/ occurs occasionally between these two morphemes. For example, the construction of /dap/ and /ŋɛ/ becomes [ⁿ̊dep˧˧ ŋ˥˥ ŋɛ:˥˥] *'to count'*. This phenomenon occurs regardless of the phonemic composition of the nucleus morpheme, but it is observed more frequently in the forms ending with stops and forms having mid level tone.

/pɣk/+/ŋɛ/ : [pɣk˥˥ ŋ˥˥ ŋɛ:˥˥] *'to jump'*
/tit/+/ŋɛ/ : [tit˥˥ ŋ˥˥ ŋɛ:˥˥] *'to fix'*
/phɔŋ/+/ŋɛ/ : [pʰɔ̂ŋ˧˧ ŋ˥˥ ŋɛ:˥˥] *'to open'*
/tshan/+/ŋɛ/ : [tsʰân˧˧ ŋ˥˥ ŋɛ:˥˥] *'to throw'*

When the phoneme structure of the nucleus morpheme is CV#, the phoneme /ŋ/ which comes as the juncture, sometimes combines with that syllable and becomes CVŋ.

/ɪá/+/ŋɛ/ : [ɪa:˥˥ ŋɛ]~[ɪaŋ˥˥ ŋɛ], /ɪɛ́/+/ŋɛ/ : [ɪɛ:˥˥ ŋɛ]~[ɪɛŋ˥˥ ŋɛ]
/ʔɛ/+/ŋɛ/ : [ʔɛ:˥˥ ŋɛ]~[ʔɛŋ˥˥ ŋɛ], /ɪɯ́/+/ŋɛ/ : [ɪɯ:˥˥ ŋɛ]~[ɪɯŋ˥˥ ŋɛ]

Thus, CV# and CVŋ are free variations, but it can be said that the

morphemes {lá} {lɛ́} consist of two different morphemes [Ed. allomorphs?] such as /lá/ and /láŋ/, /lɛ́/ and /lɛ́ŋ/. In usual utterances, the latter is used more often.

GRAMMATICAL SYSTEM OF BISU

At present, I do not have enough data to describe the grammar of Bisu satisfactorily. I can only outline it.

8. *WORD-UNITS OF BISU* consist of combinations of one, two or more morphemes. One of the morphemes of the word-units which consist of two or more morphemes, is usually an auxiliary morpheme ʔaŋ- or -ŋɛ.

/ʔaŋ-khjɨ̀/	*'debt'*	/khjɨ̀-ŋɛ/	*'to lend'*
/ʔaŋ-hjà/	*'itch'*	/hjà-ŋɛ/	*'to itch'*
/ʔaŋ-dɔ̀/	*'soft'*	/dɔ̀-ŋɛ/	*'to be soft'*

As is clear from the examples mentioned above, when ʔaŋ combines with a morpheme, it becomes a noun expression and when -ŋɛ combines with the same morpheme, it becomes a verb expression. This process is the basic prominent feature of word structure in Bisu. It is possible, of course, to make a word-unit by a construction of two or more morphemes without ʔaŋ- or -ŋɛ.

tù tshɔ̀ŋ *'hat'* ← ʔaŋ-tù *'head'* and tshɔ̀ŋ-ŋɛ *'put in'*

khŵ tshɔ̀ŋ *'trousers'* ← là-khŵ *'leg'* and tshɔ̀ŋ-ŋɛ *'put in'*

mà plàw phà *'leaf of the palm'* ← mà-plàw *'palm'* and ʔaŋ-phà *'leaf'*

The constructions on the left side must be treated as word-units. Therefore, we can regard the existence of ʔaŋ- as a unit which shows the breaking point [Ed. constituent boundaries] of words. For instance, *'fruit'* /tsŵŋ-tswŋ sŵ/ is a word-unit made up of the construction of three morphemes; however, *'nut'* /tsŵŋ-tswŋ ʔaŋ- sŵ/ is a construction of two word-units each formed by single morphemes. *'egg'* /hja-ʔu/ is a word-unit made up of two morphemes, but *'sword'* /hmja ʔaŋ-sɔ̀/ is a construction of two word-units, one of which is a single morpheme and the other is two morphemes. And also *'hilt of the sword'* /hmja ʔaŋ-phù/ should be dealt with as a construction of two word-units.

9. *SENTENCES OF BISU* can be grouped roughly into the equational type and narrative type. These types have different negatives and are distinguished by the following points. The equational type is composed of two noun expressions, and when it is pronounced carefully there is a pause between the two noun expressions. The narrative type is composed of a verb expression ending with the morpheme -ŋɛ, or with an auxiliary

morpheme which can take its place, and a noun expression preceding the verb expression. When it is pronounced carefully, there is also a pause between the noun expression and verb expression (# shows pause).

Equational type:

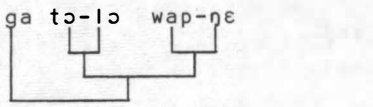
ga# noun expression # *'I am...'* ga# bi̯-sù *'I am a Bisu'*
ga# noun expression ma-ʔa# *'I am not...'* ga# bi̯-sù ma-ʔa *'I am not a Bisu'*

Narrative type:

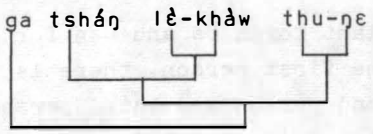
ga# verb expression (-ŋɛ)# *'I do...'* ga# ʔɛ́-ŋɛ *'I go (to the south)'*
ga# ma- verb expression # *'I do not...'* ga# ma-ʔɛ́ *'I do not go (to the south)'*

Morphemes which can occur in the environment of the noun expression are called morphemes of Group S, and morphemes which can occur in the environment of verb expression are called morphemes of Group V. Morphemes which can take the place of ga are put in Group S. I cannot find any other morphemes which can take the place of ma-. But there are several morphemes which can take the place of -ŋɛ. These morphemes, ma-, -ŋɛ and the following ones, are put in Group E. The morphemes of Bisu can be divided roughly into these three groups: Group S, Group V, and Group E.

10. In Bisu, the relation of nominative (subject) and accusative (object) usually is not expressed by special morphemes. This function is fulfilled only by order.



'I (s) *take a butterfly* (o)*'*



'I (s) *arrest a thief* (o)*'*

On the other hand, *'...by, with, etc.'*, *'...to, at, etc.'*, *'...from'*, *'with'*, and *'...more...than... (comparative)'* are expressed by special morphemes, and the narrative type is enlarged as can be seen from the following.

i.	ga	S-na	V-ŋɛ	*I ... to ... do*
ii.	ga	S-kɔ́ŋ	V-ŋɛ	*I ... from ... do*
iii.	ga	S-tšàj	V-ŋɛ	*I ... from ... do*
iv.	ga	S-nɛ	V-ŋɛ	*I ... with ... do*
v.	ga	S-ʔɣ	V-ŋɛ	*I ... with ... do*
vi.	ga	S-lɔ̀-bà-pà	V-ŋɛ	*I ... than ... am*

i. ga naŋ-na niŋ pì-ŋɛ *'I give this to you.'*
ii. ga naŋ-kɔ́ŋ niŋ kjì-ŋɛ *'I borrow this from you.'*
iii. ga tšàŋ-hàj-tsàj lɯ́-ŋɛ *'I have come from Chiang Rai.'*
iv. ga naŋ-nɛ ʔɛ́-ŋɛ *'I go with you.'*
v. ga nu-ʔɣ dɯ́ŋ-ŋɛ *'I sit here.'*
vi. ga naŋ-lɔ̀ bà pá hmɔ́ŋ-ŋɛ *'I am taller than you (are).'*

In addition, the -na is used in the following cases:

ga naŋ-na khɛ-ŋɛ *'I am afraid of you.'*
ga naŋ-na mɣ́-ŋɛ *'I dislike you.'*

The relation between the subject and the object which the subject is afraid of or dislikes is expressed by an equivalent of the Japanese ni but not o in Bisu.

The auxiliary morphemes such as -na, are: dative na; comitative kɔ́ŋ (person), tšàj (place); accompaniment nɛ; locative ʔɣ. I put all these morphemes into Group E, alongside the abovementioned ma- and -ŋɛ.

'I go to Chiang Rai.' ga tšàŋ-hàj ʔɛ́-ŋɛ
'I sit on a chair.' ga tàŋ-ʔɪ dɯ́ŋ-ŋɛ

The relation (of ni in Japanese) *'to'*, *'on'* in English in the above sentences is not expressed by a special morpheme in Bisu.

11. Among the morphemes of Group S, personal pronouns which can be replaced by ga have the following system. In addition to singular and plural forms, there is a dual form - *'we two'* and *'you two'*.

1sg.	ga	pl.	gu	du.	gaj
2sg.	na~naŋ	pl.	nɔŋ	du.	naj
3sg.	ja~jaŋ	pl.	jɔŋ	du.	x

In the singular form, there are two variant forms Ca and Caŋ for the second person and third person. But for the first person, there is no Caŋ form as opposed to a Ca form. The second person and third person show an alteration of vowels such as singular Caŋ, plural Cɔŋ. In the dual form, the first person and second person have Caj in contrast to the singular Ca form. /ga ʔɛ́-ŋɛ/ *'I go'* can change to /ga-lɑ́ŋ ʔɛ́-ŋɛ/ *'I go myself'*. For the second person and third person, this ga-lɑ́ŋ *'myself'* has the following forms:

1. ga-lɑ́ŋ (ʔɛ́-ŋɛ) 2. naŋ-lɑ́ŋ (ʔɛ́-ŋɛ) 3. jaŋ-lɑ́ŋ (ʔɛ́-ŋɛ)

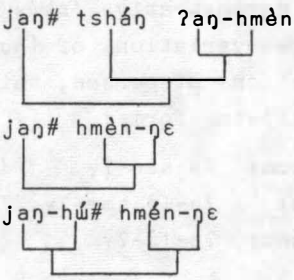
A basic sentence pattern of the equational type jaŋ# tshɑ́ŋ ʔaŋ-hmɛ̀n *'He is a good man'* is jaŋ# hmɛ̀n-ŋɛ *'He is good'* in the narrative type. This can change further to jaŋ-hɯ́# hmɛ̀n-ŋɛ *'His is good'*.

The forms correlating with jaŋ-hɯ́ are as follows:

ga-hɯ́ hmén-ŋɛ *'Mine is good.'*

naŋ-hɯ́ hmèn-ŋɛ *'Yours is good.'*

jaŋ-hɯ́ hmèn-ŋɛ *'His is good.'*



niŋ# náŋ-sɯ́ ʔaŋ-hmèn *'This is a good book'* of the equational type is ni-náŋ-sɯ́# hmèn-ŋɛ *'This book is good'* in the narrative type. The demonstratives in contrast with niŋ have the following system.

(1) ni-niŋ (object near the speaker); (2) thɛ ~ thɛŋ (object far from the speaker); (3) hɛ ~ hɛŋ (object further from the speaker); (4) hjɔ (object even further from the speaker); (5) hɔ̀k hjɔ (object furthest from the speaker). The CV# and CVŋ forms which occur in (1)-(3) can freely replace each other, but it is obscure where (4)-(5) are distinguished or whether they have any obvious distinction.

niŋ# náŋ-sɯ́ *'This is a book'* can change to ni-ma# náŋ-sɯ́ *'This thing is a book'*. The forms of other demonstratives in contrast with this ni-ma are as follows.

ni →ni-ma; thɛ →thɛ-ma *'that thing';* hɛ →hɛ-ma *'that thing';*
hjɔ →hjɔ-ma *'that thing over there';* hɔ̀k-hjɔ →hɔ̀k-hjɔ-ma *'that thing far over there'.*

These locatives can come before the locative -ʔɣ mentioned above. Here are examples.

ga nu-ʔɣ	dɯ́ŋ-ŋɛ	*'I sit here.'*
ga thɛ-ʔɣ	dɯ́ŋ-ŋɛ	*'I sit there.'*
ga hɛ-ʔɣ	dɯ́ŋ-ŋɛ	*'I sit over there.'*
ga hjɔ-ʔɣ	dɯ́ŋ-ŋɛ	*'I sit far from here.'*
ga hɔ̀k-hjɔ-ʔɣ	dɯ́ŋ-ŋɛ	*'I sit further from here.'*

Among these examples, only the demonstrative (object near the speaker) does not correspond with the system mentioned above.

It is necessary to describe here the variation of *'this'* ni. It has been pointed out that the form niŋ is freely interchangeable with ni; besides that there are also nu- and nɛ- distributed in the following way.

/nu-ʔɣ/ *'here'* {nu-} /nɛ-hla/ *'this month'* {nɛ-}

Since *'that'* thɛ and *'there'* hɛ have the same form before -ʔɣ and any other environment, we treat {nu-} and {nɛ-} as variations of {ni ~ niŋ}.

The demonstrative *'this'* consists of the free variation of {ni ~ niŋ} and three variations of {nu-, nɛ-}.

Questions of person, thing, time, place and number are expressed in the following forms:

person:	ʔa-sàŋ-ʔɣ	*'who'*	thing:	ma-tšɣ-ʔɣ	*'what'*
time:	ʔa-lɔ̀ hmɯ-ʔɣ	*'when'*	place:	kɣŋ-ʔɣ	*'where'*
number:	ʔa-lɔ̀-ʔɣ	*'how'*			

All of them occur with -ʔɣ. I assume that they are the same morpheme as the locative -ʔɣ mentioned above. In short, all representative forms of questions are expressed by the locative in Bisu.

If we translate word by word ʔa-sàŋ-ʔɣ lá-ŋɛ *'Who comes?'*, it will be *'In whom does it come?'*, ma-tšɣ-ʔɣ tsà-ŋɛ *'What do you eat?'* will be *'In what do you eat?'* and ʔa-lɔ̀-ʔɣ tša-ŋɛ *'How much do you have?'* will be *'In how much do you have?'*.

12. In addition to personal nouns, demonstratives and interrogatives mentioned in Section 11, words which can be put in Group S, may be grouped into seven classes by their forms:

1) Forms without prefix.
2) Forms with prefix ʔaŋ-.
3) Forms with prefix ʔa-.
4) Forms with prefix ɟɬ-.
5) Forms with prefix ka-.
6) Forms with prefix ʔù-.
7) Forms with suffix -ba.

The following is an outline of each case.

1) Forms without prefix -

i. Words of a single morpheme
lá̋ŋ *'water'*, khɯ́̋ŋ *'year'*.

ii. Words which consist of two morphemes
mɛ́-hnɯ *'eye'*, hná-khá̋ŋ *'nose'*.

iii. Words which consist of three morphemes
là-tshɯ̀-tɔŋ *'elbow'*, làm-tɔ̀ŋ-hné *'dragonfly'*.

A great number of loanwords from Thai consist of three syllables, but we cannot regard them in Bisu as words which consist of three morphemes:

màj si fàn *'a toothbrush'*, ni lɬ kà *'a watch'*.

2) Forms with prefix ʔaŋ-. This prefix signifies *'matters or names of objects'*. ʔaŋ-hɔ̀ŋ *'room'*, ʔa -thà *'floor'*, ʔaŋ-phà *'leaf'*, ʔaŋ-khɔ

'bark of tree'.

The majority of words with ʔaŋ- can be put into the frame of the equational type, ni-ma# ... *'This is ...'*, but several words with ʔaŋ- cannot be put into this environment, for instance, *ni-ma ʔaŋ-tha, *ni-ma ʔaŋ-thú, *ni-ma ʔaŋ-hʉ̀, *ni-ma ʔaŋ-lá. These words were originally in Group V; tha-ŋɛ *'keen'*, thú-ŋɛ *'thick'*, hʉ̀-ŋɛ *'big'* and lá-ŋɛ *'come'* as words with -ŋɛ, and after prefixing ʔaŋ joined Group S. This is the difference between words which are originally Group S and words which can be assigned to Group S from Group V after derivation with ʔaŋ. The latter has the same potential as the former with respect to ga in a narrative type.

ni-ma # hʉ̀-ŋɛ	*'This is big.'*	ni-ma # thú-ŋɛ	*'This is thick.'*
ʔaŋ-hʉ̀ # hmɛ̀n-ŋɛ	*'The big one is good.'*	ʔaŋ-thú # hmɛ̀n-ŋɛ	*'The thick one is good.'*
ʔaŋ-hɔ́ŋ # hmɛ̀n-ŋɛ	*'The room is good.'*	ʔaŋ-thà # hmɛ̀n-ŋɛ	*'The floor is good.'*

3) Forms with prefix ʔa-. These forms occur in some consanguineous nouns and some names of animals.

ʔa-hʉ̀	*'grandfather'*	ʔa-phɛ́	*'younger brother'*
ʔa-phɨ̀	*'grandmother'*	ʔa-mɛŋ	*'cat'*
ʔa-tsi	*'elder sister'*	ʔa-hmjàŋ	*'cow'*
ʔa-pɔ̀	*'younger sister'*	ʔa-mɔ̀ŋ	*'horse'*
ʔa-ʔáj	*'elder brother'*	ʔa-kàw	*'duck'*

4) Forms with prefix jɨ̀-. I have recorded only two words of this type. Both are connected with fluid.

jɨ̀-tšhʉ̀ *'sneeze'* → ga jɨ̀-tšhʉ̀ tšhʉ̀-ŋɛ *'I have a sneeze'*
jɨ̀-šɨ̀ *'urine'* → ga jɨ̀-šɨ̀ šám-ŋɛ *'I urinate'*

5) Forms with prefix ka-. There are many loanwords from Northern Thai in this form.

ka-tàj *'rabbit'* < N. Thai kà-tàaj; ka-pàw *'sack'* < N. Thai kà-pǎw; ka-pɔ̀ŋ *'tin'* < N. Thai kà-pɔ̌ŋ; ka-sɣ̌j *'monkey'* < N. Thai ?; and ka-kjʉ̀ *'valley'* < N. Thai ?.

6) Forms with prefix ʔù-. I have recorded only the following three words. It is possible that ʔù- is a morpheme which is connected with rounded objects.

ʔù-hla *'moon'*, ʔù-kʉ̀ *'star'*, ʔù-hlɔ̀ŋ *'jar'*.

When ʔù-hla is modified by another morpheme and makes another word, the prefix ʔù- does not occur.

ʔù-hla → tɔ̀-hla *'next month'*, nɛ-hla *'this month'*.

7) **Forms with suffix -ba.** Three types of the suffix -ba are possible:

i. $-ba_1$ means *'big'*. là-ba *'thumb'*, tsáŋ-ba *'eagle'*.

ii. $-ba_2$ means *'female'*. khà-ba *'wife'*, ʔù̀-ba *'aunt'*.

iii. $-ba_3$ - it is obscure what this -ba means.

nɯŋ-ba *'mind'*, khɔ̀ŋ-ba *'village'*, kɛ́ŋ-ba *'road'*, lɔ-ba *'stone'*, pɔ̀ŋ-ba *'abdomen'*.

13. Among the words of Group S, numerals have an obvious system. All numerals in Bisu are loanwords from Northern Thai.

1 nù̀ŋ 2 sɔ́ŋ 3 sám 4 sî 5 hà 6 hɔ́k 7 kjît

8 pɛ̀t 9 káw 10 sîp 11 sîp-ʔɛ́t 20 sáw 21 sáw-ʔɛ́t

100 lɔ́j 1000 phan

For *'one'*, as in Thai, two morphemes nù̀ŋ and -ʔɛ́t are found. Besides this, tù̀ is used instead of nù̀ŋ,ʔɛ́t in the following environments: *'one person'* tsháŋ tù̀ màŋ, *'one month'* tù̀ hla, *'one year'* tù̀ pi, *'half'* tù̀ khɯŋ. Therefore, in the case of *'one'*, three morphemes are used, and they supplement each other.

For *'two'*, ni is used alongside sɔ̌ŋ as in nì hla *'two months'*, nì hnɯŋ *'two days'*. Therefore, in the case of *'two'*, sɔ̌ŋ and nì supplement each other.

For classifiers which follow numerals, I have recorded only one word which concerns human beings, maŋ (as in the abovementioned *'one person'* and ja-kha tù̀ màŋ *'one friend'*), but we can expect to find various kinds of classifiers.

14. The basic form of verb expression for constructing the narrative type is Group V + -ŋɛ. -ŋɛ can be replaced by the following forms (2)-13)).

1) **Basic Form V-ŋɛ:** The negative form is ma-V mentioned above.

ga # kjà-ŋɛ *'I hear'* → ga # ma kjà *'I do not hear'*
ga # ʔɛ́-ŋɛ *'I go'* → ga # ma ʔɛ́ *'I do not go'*

2) **V-ga-ŋɛ:** This form shows "possibility" of the basic form V-ŋɛ;'the negative of it is ma-V-ga.

ga # ʔɛ́-ŋɛ *'I go'* → ga #-ʔɛ̀-ga-ŋɛ *'I can go'*
ga # ma-ʔɛ́ *'I do not go'* → ga # ma-ʔɛ́-ga *'I cannot go'*

3) V-tša-ŋɛ: This form shows "progressiveness" of the basic form V-ŋɛ; there is no negative for this form.

ga # bì-sù tàŋ kjì-ŋɛ *'I speak the Bisu language'* →
ga # bì-sù tàŋ kjì-tša-ŋɛ *'I am speaking the Bisu language'*

This tša-ŋɛ is a morpheme which means *'have', 'be'*. Therefore, it is quite possible that the word was derived by analogical influence of the word -jù in Thai (original meaning is *'have'*).

4) V-ka-ŋɛ: This form shows "mutualness" of the basic form V-ŋɛ. (*'to do reciprocally'*).

ga # kjì-ŋɛ *'I speak'* → gaj # kjì-ka-ŋɛ *'We two speak to each other'*
gaj # si-tɣŋ-ka-ŋɛ *'We two struggle with (each other)'*

This form can be regarded as a borrowed -kan from Thai.

5) V-là: This form expresses "question" for the basic form V-ŋɛ.

naŋ # ʔɛ́-ŋɛ *'You go'* → naŋ # ʔɛ́-là *'Do you go?'*
naŋ # tsà-ŋɛ *'You eat'* → naŋ # tsà-là *'Do you eat?'*

6) V-tšhí: This form shows "causation" for the basic form V-ŋɛ.

naŋ # ʔɛ́-ŋɛ *'You go'* → naŋ # ʔɛ́-tšhí *'You make one go'*
naŋ # kjà-ŋɛ *'You hear'* → naŋ # kjà-tšhí *'You make one hear'*

7) V-sì-khà: This form shows "desire" in the basic form V-ŋɛ.

ga # ʔɛ́-ŋɛ *'I go'* → ga # ʔɛ́-sì-khà *'I want to go'*
ga # tsà-ŋɛ *'I eat'* → ga # tsà-sì-khà *'I want to eat'*

8) ma-Vn-sù̀: This form expresses (Mizenkei, "near negative") *'not yet', etc.* in the basic form V-ŋɛ.

ga # kjà-ŋɛ *'I hear'* → ga # ma-kjàn-sù̀ *'I did not hear yet'*
ga # wà-ŋɛ *'I make'* → ga # ma-wàn-sù̀ *'I did not make yet'*
ga # ʔɛ́-ŋɛ *'I go'* → ga # ma-ʔɛ́n-sù̀ *'I did not go yet'*

9) V-kan-sù̀: This form shows "experience of the past" in the basic form V-ŋɛ; the negative of it is ma-Vkan-sù̀.

ga # lá-ŋɛ *'I come'* → ga # lá-kán-sù̀ *'I have come'* →
ga # ma-lá-kán-sù̀ *'I have not come'*

10) V-tshá: This form expresses the perfect tense of the basic form V-ŋɛ; as alternatives, V-na-tshá and V-kha-tshá are found.

tsù̀ŋ-tsuŋ # hjù̀ŋ-ŋɛ *'The tree dies'* → tsù̀ŋ-tsuŋ # hjù̀ŋ tshá *'The tree has died'*

mɜŋ-mɜŋ # hmiŋ-ŋɛ *'The mango becomes ripe'* → mɜŋ-mɜŋ # hmiŋ-tshá *'The mango has become ripe'*

ni-ma # hŵ-ŋɛ *'This is big'* → ni-ma # hŵ-na-tshá *'This has become big'*

ga # khɔ́-ŋɛ *'I got tired'* → ga # khɔ́-kha-tshá *'I have got tired'*

11) V-ʔɔ́: This form expresses the imperative of the basic form V-ŋɛ.

lá-ŋɛ *'to come'* → lá-ʔɔ́ *'Come!'*

ʔɛ́-ŋɛ *'to go'* → ʔɛ́-ʔɔ́ *'Go!'*

12) ma-V (high level falling tone and lengthened vowel): This form indicates negative imperative of the basic form V-ŋɛ.

kjà-ŋɛ *'hear'* → ma-kjà [mɛ₃ kja:₄₄₁] *'Don't hear!'*

sà-ŋɛ *'eat'* → ma-sà [mɛ₃ sa:₄₄₁] *'Don't eat!'*

ʔɛ́-ŋɛ *'go'* → ma-ʔɛ́ [mɛ₃ ʔɛ:₄₄₁] *'Don't go!'*

13) V-jà (high level falling tone): This form forms exclamations with the basic form V-ŋɛ.

mɛ̀n kha-ŋɛ	*'to thank'*	→ mɛ̀n kha-jà [₄₄₁]	*'Thanks!'*
kà-tsà-ŋɛ	*'to win'*	→ kà-tsà-jà	*'Won!'*
kan-lá̰ŋ-ŋɛ	*'to be defeated'*	→ kan-lá̰ŋ-jà	*'I am defeated!'*
wà-khɔ-ŋɛ	*'to finish the work'*	→ wà-khɔ-jà	*'I have finished the work!'*

This jà is used particularly in negative expressions:

ma-hmá-jà *'True!'* (translated word for word, it means *'Not a lie!'*); ma-ʔa-ja *'Lie!'* (translated word for word, it means *'Not the truth!'*); however, I have not heard *hma-ŋɛ, *ʔa-ŋɛ.

15. *INTERLOCKING SYSTEM*

Sequences of one word from Group V plus another one from the same group sometimes express two continuing actions, or the trend of the action defined by the main word. As in the examples in the section on the phonemic system [Ed., p.59], the form of this construction is limited to the following four forms which mean *'to go'*, *'to come'*.

V-lá-ŋɛ *'(downward) ... come to do'*

V-lɛ́-ŋɛ *'(upward) ... go to do'*

V-lŵ-ŋɛ *'(from below upward) ... go to do'*

V-ʔɛ́-ŋɛ *'(downward) go to do'*

For example, tsà-ŋɛ *'to eat'* → tsà-lá-ŋɛ *'come to eat'* → tsà-ʔɛ́-ŋɛ *'go to eat'*.

ʔɔ́-ŋɛ *'enter'* → ʔɔ́ŋ-lá-ŋɛ *'(downward) enter (come)'*
ʔɔ́ŋ-lɛ́-ŋɛ *'(upward) enter (go)'* → ʔɔ́ŋ-lɯ́-ŋɛ *'(upward) enter (come)'*
ʔɔ́ŋ-ʔɛ́-ŋɛ *'(downward) enter (go)'*

Forms such as V-lá-ŋɛ, show in a single form expressions correlating to

shang lai - hsia lai - shang chü - hsia chü
（上來）（下來）（上去）（下去）

in Chinese.

The contrasts of *'bring'* háŋ-lá-ŋɛ, *'take away'* háŋ-ʔɛ́-ŋɛ, *'fetch'* šɯ̀-lá-ŋɛ and *'carry away'* šɯ̀-ʔɛ́-ŋɛ are expressed in the differences of the attached part. Of course, the attached parts are defined by the character of the words of Group V. tha-ŋɛ *'stand up'* as opposed to tha-lá-ŋɛ *'rise'* is possible. But *tha-lɯ́-ŋɛ is impossible. One can make khɣn-lá-jà *'arrive'* become → khɣn-lá-ŋɛ *'come'* → khɣn-lá-jà *'Oh, I have arrived!'*, but other forms are impossible.

The eminent feature of this interlocking system is that V-V-ŋɛ exists side by side with V-ŋɛ which is not interlocking.

16. In Bisu, there are also words formed by Group V plus Group V. But only of the V_1-V_2-ŋɛ type; there is no V_1-ŋɛ type.

tšɯ̀-tsà-ŋɛ *'remember'*, tšam-tsà-ŋɛ *'remember'*. These are not, e.g. *tšɯ̀-ŋɛ → tšɯ̀-tsà-ŋɛ; only the latter sequence is possible. This tsà-ŋɛ in its origin is the same word as *'eat'* tsà-ŋɛ, and *'remember'* is expressed as *'to eat memory'; 'win'* is expressed as *'to eat a win'*. There are similar coinages in spoken Tibetan.[9]

17. The distinguishing of the intransitive form from the transitive form in a word of Group V is rarely accomplished by two morphemes which have a [minimal: Ed.] contrast in part of their phonemic structure, but in many cases it is shown clearly by two morphemes which have unrelated phonemic structures. For example,

tsɯ̀ŋ-tswŋ hlɯ̀ŋ-ŋɛ	*'A tree falls down'*	ga tsɯ̀ŋ-tswŋ tɣ-ŋɛ	*'I fell a tree'*
tsɯ̀ŋ-tswŋ kɯ-ŋɛ	*'A tree becomes dry'*	ga tsɯ̀ŋ-tswŋ hlàw-ŋɛ	*'I dry a tree'*

But in the following cases, the partial contrast of phonemes in two morphemes indicates the function of intransitive or transitive.

ga # ʔa-mɔ̀ŋ tšàj kla-ŋɛ *'I fall down from the back of a horse'* → kla-ŋɛ *'to fall'*

ga # ʔa-mɔ̀ŋ tšàj khla-ŋɛ *'I drop something from the back of a horse'* →
khla-ŋɛ *'to drop'*
lá̀ŋ # lúm-ŋɛ *'The water becomes warm'* → lúm-ŋɛ *'to warm'*
ga # lá̀ŋ hlúm-ŋɛ *'I warm up water'* → hlúm-ŋɛ *'to warm up'*

Examples such as the above are very small in number.[10] In addition, the following contrasts are found.

plɔ̀ŋ-ŋɛ *'to make a hole'* → plɔ̀ŋ tšhí *'A hole is made'*
tšhit-ŋɛ *'to tear'* → tšhit tšhí *'to be torn'*

This V-tshi form is regarded as the form of the causative mentioned above, therefore, *'A hole is made', 'to be torn'* may be expressed in passive form; however, I am not sure this is actually so.

18. There is a verb expression which is constructed by the concatenation of a word of Group S with a word of Group V in Bisu.

For example,

jì tšhù̀ tšhù̀-ŋɛ	*'to sneeze'*	mɛ̀-bŵn bŵn-ŋɛ	*'to dream of'*
tù-tshɔ̀ŋ tshɔ̀ŋ-ŋɛ	*'to have a hat on'*	sù̀ŋ khɔ khɔ-ŋɛ	*'to have a straw hat on'*
muŋ blàp blàp-ŋɛ	*'There is a flash of lightning'*	ʔaŋ-lɔj lɔj-ŋɛ	*'to swim'*

In these constructions it is possible to place pause, for example, between jì-tšhù̀ and tšhù̀-ŋɛ. The negative of it is not *ma-jì-tšhɯ tšhù̀ but jì-tšhù̀ ma-tšhù̀ or mɛ̀-bŵn ma-bŵn. Thus, these should be regarded as the constructions of words of Group S and Group V which consist of two morphemes in each.

19. *DETERMINATIVE*

When a word of Group S is modified by a word of Group V, these are ordered in the form S-V. Transformations to noun phrases from the verbal construction S ← V are as follows:

tshá̀ŋ # hmɔ́ŋ-ŋɛ	*'The man is tall'*	tshá̀ŋ hmɔ́ŋ	*'a tall man'*
lá̀ŋ hlɔ́ŋ-ŋɛ	*'to warm up water'*	lá̀ŋ hlɔ́ŋ	*'warm water'*
lá̀ŋ hlúm-ŋɛ	*'to boil water'*	lá̀ŋ hlúm	*'boiled water'*
tshà-là # pjɔ̀-ŋɛ	*'The tiger has a striped pattern'*	tshà-là pjɔ̀	*'a striped tiger'*

20. *LOAN WORDS*

I have reported the basic points of the phonemic system and

grammatical system of Ban Lua Bisu briefly in this paper. There is much left to be desired; I wish to re-examine the data and investigate further.

Lastly, I wish to discuss loan words from Thai.

Bisu vocabulary contains a considerable number of loan words from Thai. In 850 words recorded this time, approximately 150 words were from Thai. Those loan words were borrowed in several stratum under various forms. Considering the whole of Bisu vocabulary, first, it is considered that some came with new things; that is to say, they are new words added to the original vocabulary of Bisu. Secondly, similar to the numerals *'three'* and following, mentioned above, there are words which took the place of original words of Bisu. Thirdly, though most borrowings took the place of original Bisu words such as the numerals *'one, two'*, some of them are used in complementary distribution. For example, there are two morphemes which mean *'year'*. The distribution of them is as follows:

one year	*two years*	*this year*	*last year*
tɯ̀ pi	ni pi	mi hnɯ	mi hnɯ šɣ

In the cases of *'one year'*, *'two years'*, pi which was borrowed from Thai is used. But in the case of *'this year'*, *'last year'*, the original Bisu hnɯ occurs.

As to the times of the borrowing, roughly three strata can be distinguished. As to the loan words of the oldest stratum, these came when the Bisu tribe lived in Burma or Yün-nan. All of the words which have different phonemic features from Northern Thai and Standard Thai, for example, *'silk'* ʔaŋ-hmáj (13th century Thai hmaj); *'oil'* nam hman (13th century Thai nam man (hman?)); *'north'* hùŋ hnɣ (13th century Thai hnïə); *'to be easy'* hŋàj-ŋɛ (13th century Thai ŋaj (*hŋaj)); *'blacksmith'* tšaŋ hlek (13th century Thai džaŋ hlek); *'to be pointed'* hlɛ́m-ŋɛ (13th century Thai hlɛɛm), which all contain hm-, hn-, hŋ-, hl-, are quite within the bounds of possibility as loan words which preserve the phonemic system of antiquated Thai. The twelve zodiacal signs might be borrowed at that stratum. The twelve zodiacal signs are the most similar to the Thai Lü language of Yün-nan Province.[11]

As the second stratum, it is conjecturable that Bisu has borrowed a large number of words from Northern Thai after coming to the northern region of Thailand. The loan words of this stratum comprise the largest number of loan words, for example, the ň of *'to dye'* ňɔ̀m-ŋɛ (N. Th. ňɔɔm), *'age of person'* ʔaŋ-ňu (N. Th. ʔa-ňu) is an eminent syllable-initial phoneme of Northern Thai; and *'umbrella'* tšɔŋ (N. Th. cɔɔŋ), *'clothes iron'* tàw ňit (N. Th. tàwnìt), *'market'* kat (N. Th. kàat), *'priest'* sà-tu (N. Th. satu), and *'body'* ʔaŋ-to (N. Th. tua) are unique

word forms of Northern Thai; there are no such forms in Standard Thai. As the third stratum, there are fresh loan words which are considered as having been borrowed from Standard Thai recently: *'toothbrush'* mâj si fan (Thai: prɛɛŋ sǐ fan); *'to read'* ʔan-ŋɛ (Thai: ʔaan), and *'dish'* tšan-bɛn (Thai: caan-bɛɛŋ). The forms of these words are different from Northern Thai, but correlate with Standard Thai.

In terms of form, loan words of these three stratum are grouped according to the following three types:

1) Words which have retained the original structural features of Thai, such as *'umbrella'*, *'market'*, *'clothes iron'*, *'toothbrush'* mentioned above.

2) Words which have taken the appearance of Bisu, such as the words *'to dye'*, *'age'*, *'to read'*, *'to draw a line'* mentioned above.

These have taken the same form as original Bisu by attaching ʔaŋ-, -ŋɛ which are the prominent features of words of Group S and Group V.

3) New word types have been made by loan words combined with original morphemes of Bisu.

For example, ʔà-mɔ̀ŋ kìp *'hoof'* was constructed by the combination of a loan word from Thai kìp (Standard Thai and Northern Thai is kʻìp) and a word of Bisu ʔà-mɔ̀ŋ *'horse'*. And also bʻì khìt *'match'* was constructed from bʻì- Bisu for *'fire'* and khìt from Thai máj khʻìit *'match'* (Standard Thai). Several other words look like the same construction type; however, the part which is native Bisu is not clear; for instance, the final parts hnɣ, wi of *'north'* hùŋ hnɣ and *'fan'* pjáŋ wi are borrowings from Thai: nɣ̌a, wʻii. But it is obscure whether the initial parts hùŋ and pjáŋ are native Bisu or not.

Since the abovementioned word *'match'* has an obvious element of Standard Thai, this construction type is not always loan words of the old stratum. In addition, there are several words which resemble Thai in form; but it is difficult to decide if they are, or are forms of original Bisu.

'goods'	ʔaŋ kɣ̀ŋ : Thai = khɔ̌ɔŋ	*'voice'*	ʔaŋ seŋ : Thai = sʻiaŋ
'to get drunk'	màw-ŋɛ : Thai = maw	*'bed'*	ten : Thai = tʻiaŋ

It is a very interesting problem to me to study the correlations of loan words in Bisu and the origins of these words as a whole. I wish to refer to that problem in another paper, in connection with the additional facts of languages of other mountain tribes.

ADDITIONAL NOTE

I will note briefly here the phonemic system of loan words.

It is clear that *'to count'* dáp-ŋɛ is a loan word from Thai nab, and it is quite possible to think that this word was borrowed at a very old stage.

In accordance with my report (*Tōnan Ajia Kenkyū* Vol.3, No.3, p.128), at some stage (probably when the Bisu tribe lived in the northern part of Burma or Yün-nan Province), the part of forms in Bisu which begin with voiced nasal was replaced by a voiced stop such as *ŋ → ŋg → g, *n → nd → d, *m → mb → b.

nap, which was originally a Thai word, was already borrowed when that change occurred. Therefore, it was changed *náp → ndáp → dáp like native Bisu words; for example, *ʔaŋ-ná *'pain'* → ʔaŋ-dá. On the other hand, nà, which means *'rice field'*, was borrowed from Thai na, but it was not changed to dà, because this word was borrowed after the change of *n → nd → d. In graphic form those words are as follows:

	Bisu word	loan word	loan word
	'pain'	*'to count'*	*'rice field'*
Earlier stage:	*ʔaŋ-ná	*náp-ŋɛ < Thai nab	x
	ʔaŋ-ndá	ndáp-ŋɛ	x
Later stage:	ʔaŋ-dá	dáp-ŋɛ	nà < Thai na

Bisu is closest to Punoi in Lao and Pyen in Shan State; I think that these three are contained in a subgroup separate from, and parallel to, the Maru-Lashi-Atsi group, Akha group, Lahu group and Lisu group, within the Burmese-Lolo branch.

See: Tatsuo Nishida, *Bisu go no kenkyū (A preliminary study on the Bisu Language), Tōnan Ajia Kenkyū (The Southeast Asian Studies, Kyoto University)*, Vol.IV, No.1 (1966). Tatsuo Nishida, *Bisu go no keito* I, II *(A comparative study of the Bisu, Akha and Burmese languages), Tōnan Ajia Kenkyū* Vol.IV, No.3 (1966); Vol.IV, No.5 (1967).

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1966 "A preliminary study on the Bisu language - a language of northern Thailand recently discovered by us", *Tōnan Ajia Kenkyū* 4, pp.65-87.

NOTES

1. This survey has been carried out as one item of the **First Five Years Plan of the Center for Southeast Asian Studies, Kyoto University.** The linguistic group was comprised of members such as Yasuyuki Mitani, Makio Katsura and myself.

We express our thanks to the members of the National Science Council of Thailand and the members of the Ministry of Home Affairs for their generous support during the investigation.

2. The so-called Khammyaŋ (Northern Thai language) is spoken in this region, with such dialects as Chiangrai, Chiengmai, Lampang and Lampoon, with further variants among these dialects, cf. Herbert C. Purnell, *A short Northern Thai - English dictionary*. Chiengmai, 1963.

3. Mr Mitani gave me valuable co-operation in the study of the Bisu language. For my whole study, please refer to "A study on the languages in Northern Thailand", *Tōnan Ajia Kenkyū (Southeast Asian Studies)*, Vol.3, No.3, 1965.

4. Yasuyuki Mitani, "Notes on the survey of Lawa language in Thailand", *Tōnan Ajia Kenkyū (Southeast Asian Studies)*, Vol.3, No.1, 1965, p.153.

5. Dr A.F.G. Kerr, "Two Lawa Vocabularies", *Journal of the Siam Society*, 21, 1927. He speaks of two Lawa languages; one of them is spoken in Ban Luang village, situated southwest of Chiengmai City of Chiengmai Province, and the other is used by the Lawa tribe in Kanburi Province. Dr Kerr reported 48 words of the former, recorded when he visited the place in 1922, and 86 words of the Lawa language of Kwẽyai and 34 words of Kwênoi; however, he thought that they do not resemble Lawa of Ban Luang, but rather resemble one of the language group of Tibetan-Burmese languages which is close to Lisu and Akha. The description of the words is not clear, and no record of tonemes is presented.

6. Henri Roux, "Deux tribus de la région de Phong Saly (Laos Septentional)", *BEFEO* 24, 1924, pp.489-500. Mr Roux reported 542 words of the P'u-Noi language. He did not know how this language, as well as the Akha language which he reported in the same paper, should be classified. R. Shafer marked it as a language situated between Burmese and Lolo, cf. R. Shafer, "The link between Burmese and Lolo", *Sino-Tibetica*, No.2, 1938; "Phunci and Akha tones", *Sino-Tibetica*, No.4, 1938.

7. G. George Scott, *Gazetter of Upper Burma and the Shan States*, pt.1, Vol.I, Rangoon, 1900, pp.717-19. "Vocabulary of Pyen (or Pin) tribe, Kengtung, Southern Shan States" (by G.C.B. Stirling). 246 words of Pyen are recorded in this paper. There is no record of tonemes, but its form is closest to the Bisu language.

8. I wish to advocate that there is a new group represented by the Bisu, Pyen and Phunoi languages which have few differences, and I would make a guess that several languages belonging to this language group are still spoken at some places scattered over Laos, Thailand and Burma (Shan State). I will prove that this group is intermediate between Akha, which is spoken (along with Bisu) in Laos, Thailand and Burma (Shan State), and Burmese, which is spoken over in Burma. Please refer to "Bisu go no keito (A comparative study of the Bisu, Akha and Burmese languages)", *Tōnan Ajia Kenkyū (Southeast Asian Studies)*, Vol.4, No.2 (to be published as Vol.4, No.3, 1966). And for Akha, please refer to "Akha go no onso taikei; Tai koku hokubu ni okeru sanchimin Akha zoku no gengo no kizyutsuteki kenkyū (Phonemic system of the Akha language; descriptive studies on the language of the Akha hill tribe in Northern Thailand)", *Studia Phonologica (Onsei kagaku kenkyū)*, Vol.IV, 1966, pp.1-37.

9. For instance, there are coinages in the oral language of Central Tibet: sùr sà-wa *'to eat a horn = to say in a roundabout way'*; khoŋ-tšho sà-wa *'to eat anger = angry'*; tshik-po sà-wa *'to eat a burning thing = angry'*.

There are other compound types in Bisu which have -tsá as in the following verbs: *'to learn'* hlèn tsá-ŋɛ; *'to write'* tɛm tsá-ŋɛ; *'to read'* ʔan tsá-ŋɛ. The common feature of these three examples is that they are all loan words from Thai and have the same meaning of *"letter"*; therefore, they seem to be structural patterns of Thai.

10. For another feature, the contrast of tones shows contrast of meaning. phŵ-ŋɛ *'unbind'* phŵ-ŋɛ *'combine'* : -phî-ŋɛ *'make a fire'* phî-ŋɛ *'close'*.

11. Tatsuo Nishida: "A study of the 16th century Pai i = Chinese and Chinese = Pai i vocabularies", *The Toyo Gakuho (Reports of the Oriental Society)*, 43 (1960), pp.46-47.

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